

SOUTHEAST ALASKA SEA CUCUMBER
STOCK ASSESSMENT AND MANAGEMENT PART II:
1991, 1994, 1997, AND 2000 SEASONS



by

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FOREWORD

The Southeast Alaska sea cucumber management plan provides for a three-year rotation of commercial fishing areas and a series of areas closed to the taking of sea cucumbers in the commercial fishery. This document is the second in a four-part series of Regional Information Reports that detail stock assessment, basic life history research, and commercial fishery activities for sea cucumbers in Southeast Alaska. Since each fishery rotation area group includes separate areas, this report will describe only the areas surveyed and fished during the 1991, 1994, 1997, and 2000 seasons. Additional reports are available for: 1) the 1990, 1993, 1996, and 1999 seasons, 2) the 1992, 1995, 1998, and 2001 seasons, and 3) a fourth report detailing assessment activities within the areas closed to commercial fishing.

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ABSTRACT

The Alaska Department of Fish and Game drafted the first sea cucumber fishery management plan prior to the fall commercial fishing season in 1990. The plan called for specific fishing areas to be opened to commercial fishing on a three-year rotational basis, assessment surveys to be conducted prior to fishing, weekly fishing periods, and a number of control areas where commercial fishing would not be allowed. Assessment surveys are conducted using SCUBA diving to count sea cucumbers on two-meter wide strip transects. In the 1991, 1994, 1997, and 2000 seasons, a total of 782 transects were completed during 51 sea cucumber population assessment surveys in 19 unique survey areas in Southeast Alaska. A total of 42,003 sea cucumbers were observed. Some of these fishing areas have been surveyed on four occasions to give us a time series of abundance estimates. For some areas with the lowest densities of sea cucumbers, assessments have been completed on only one occasion. The length of shoreline of the survey areas averaged 130,451 meters each year. The density of sea cucumbers on a per meter of shore basis averaged 13.8 sea cucumbers per linear meter. The greatest density of sea cucumbers was found in survey area 106-30 at 35.2 cucumbers per linear meter of shore with the lowest density found in area 109-30 with 3.6 cucumbers per linear meter of shore. In addition to numbers of sea cucumbers per linear meter of shore, 4,031 independent measurements of numbers of sea cucumbers per square meter by substrate type and average depth were recorded. The greatest density of sea cucumbers on a per square meter basis occurred at a depth range of 4–8 meters on shell substrate at 0.79 sea cucumbers per square meter. Mud and silt substrates had the lowest densities of sea cucumbers. A total of 6,949 individual sea cucumbers have been weighed during assessment surveys with an overall average of 174.2 grams. The average sea cucumber weight by area has varied between 109.3 grams for area 101-90 to 271.5 grams for areas 106-44, 106-45, and 106-50 combined. The total annual sea cucumber surveyed biomass for each of these four seasons has averaged 8,773,129 pounds (3,983,001 kg). The 90% one-sided confidence interval averaged 64% of the mean.

The commercial fishery guideline harvest level (GHL) of sea cucumbers for these four seasons totaled 4,217,832 pounds (1,913,177 kg) for an average annual GHL of 1,054,458 pounds (478,294 kg). The commercial fishing season was October 1 through March 31. The commercial harvest of sea cucumbers for these four seasons totaled 4,247,458 pounds (1,928,346 kg) for an average annual catch of 1,061,865 pounds (482,087 kg). There was an average of 224 divers participating each season. The average commercial catch per diver/day of eviscerated sea cucumbers has increased each season. The average catch per diver day per season was 364 pounds (165 kg) for the 1991 season, 693 pounds (315 kg) for the 1994 season, 823 pounds (374 kg) for the 1997 season, and 941 pounds (427 kg) for the 2000 season. The smallest average catch per diver/day for any one fishing area was 183 pounds (83 kg) in fishing areas

109-44, 109-45, and 109-50 (combined) and the greatest 1,280 pounds (581 kg) in fishing areas 112-11 and 112-21 (combined). A total of 12,593 sea cucumbers have been weighed individually during dockside sampling of the 1991, 1994, 1997, and 2000 season commercial fisheries. The overall average weight of those samples was 208 grams (0.46 pounds).

INTRODUCTION

This document describes the research and population assessment program for sea cucumbers *Parastichopus californicus* in Southeast Alaska during the 1991, 1994, 1997, and 2000 seasons. It also summarizes the commercial sea cucumber fishery for those seasons. The sea cucumber fishery in Southeast Alaska is managed under a plan based on a conservative policy of sustained yield. This management plan was initially developed in 1990 (ADF&G 1990) and adopted into regulations (5 AAC 38.140.) by the Alaska Board of Fisheries (ADF&G 1991, 1992, 1997, and 2000). The overall goal of the sea cucumber stock assessment survey program is to estimate the total number and average weight of sea cucumbers in both control and commercial harvest areas, and to determine a biologically and statistically acceptable biomass quota for areas opened to commercial fishing. The sea cucumber population assessment discussion is composed of four sections. First is a description of the statistical methods used during the assessment surveys to estimate the sea cucumber population. Second is a summary of assessment survey results, and third is a series of maps of each assessment survey area showing the location of individual transects. Fourth, the results of all four years of surveying are grouped together in the discussion segment. Methods to determine the total population and resultant commercial fishery guideline harvests have varied somewhat since the inception of the assessment program. For example, in the first few years of the program, no weights were taken during assessment surveys. For comparability in this report, survey results are calculated using the current standard methods with original guideline harvest levels included for reference. Commercial fishery statistics including season duration, total harvest, number of divers, and catch per diver day information is summarized for each of these four seasons.

SEA CUCUMBER POPULATION ASSESSMENT SURVEYS

Objectives

The primary objective of the sea cucumber assessment survey program is to conduct a population assessment survey once every three years in each potential fishing area to estimate the sea cucumber biomass available for commercial harvest. The statistical objective is to estimate the biomass in survey areas such that the lower bound of the one-sided 90% confidence interval is within 30% of the mean value (70% precision). The average weight of sea cucumbers in an area should have a precision level greater than 80%.

Sampling Methods

Density Estimates: The SCUBA Survey Method

Density estimates are made by SCUBA divers along 2-meter-wide strip transects running perpendicular to shore. A set of paired transects (two 2-meter-wide transects for each sampling location) serve as the primary sampling unit. Transects extend from the water's edge to 15 m (50 ft) below mean lower low water (MLLW). Transect length varies depending on slope of the bottom. An effort is made to limit exposure to actual depths greater than 18.5 meters because deeper dives severely limit total bottom times for SCUBA divers and pose safety risks when conducted repetitively over several days. The majority of the sea cucumber harvests by commercial divers occur at less than 15 meters depth.

A variety of methods are used to complete the transect pairs. Either one or both divers swim along the transect holding a 2-meter rod (a 2.1-cm diameter white PVC tube) in a horizontal position, perpendicular to the census path. Transect direction is maintained by reference to a compass mounted on the rod. If the transect is exceptionally long, both divers generally swim with transect rods and count sea cucumbers, resulting in the transect pair being completed as divers swim in one direction. If the transect is relatively short, or a large sample of sea cucumbers needs to be collected for weight measurements, one diver will often complete both transect pairs (shore to depth and return). The second diver collects the sea cucumbers needed in the weight sample and assists the first diver in making the counts. Two divers may swim from shore to depth and return using one transect rod with each diver counting all individuals on one side (one-half) of the transect rod if there is a large amount of kelp, large numbers of sea cucumbers, or additional counting of sea urchins. If transects are conducted by swimming from shore to depth and return, the second transect in each pair is approximately 20 meters to the left (when facing shore) of the first transect. If each transect in a pair is completed concurrently by each diver swimming in one direction, the divers are separated to the limits of visibility and safety.

Primarily from 1991 to 1994, extensive data were collected on transect length, cucumber density, substrate type, and vegetative cover. The length intervals within each transect varied greatly but were always between 5 and 100 meters in length. The method of determining length also varied between actual measurements made with a tape measure to set lengths determined by a 5 or 10 meter string but most commonly by diver estimates based on arm span calibrations. An attempt was made to collect this type of density and substrate information for each transect once. Divers recorded data on stop depth, predominant vegetative cover and substrate types, the presence of other species of interest (including sea urchins and abalone), and any other interesting observations. Presence of vegetation in each segment is recorded as percent cover for up to two types. Substrate type is recorded for the two most common types on each segment, with the most prevalent type listed first. Definitions of the substrate types and vegetation types recorded during the assessment surveys are included in Appendices 1 and 2. The beginning and ending times for each transect are recorded to allow for later standardization to MLLW.

The state's *R/V Sundance* and *R/V Medeia* have been used as dive support vessels for sea cucumber assessment surveys. These vessels can accommodate six divers in addition to vessel officers. Six divers are generally assigned to each cruise, allowing two dive teams to operate simultaneously. Two aluminum skiffs, which have been enhanced for diving purposes, accompany the support vessel. All diving is conducted from these skiffs.

Due to the nature of the described dive surveys (multiple dives per day, reverse-profile to 70 fsw, multi-day diving), 32% Nitrox was used in 2000 for all diving to enhance the safety of the diving operations. Normal compressed air was used during the 1991, 1994, and 1997 surveys. Nitrox is produced onboard via a membrane equipped low-pressure compressor. All diving was conducted in accordance with the Alaska Department of Fish and Game's Dive Safety Manual.

Location and Number of Transect Samples

Stock assessment surveys of sea cucumber populations for the 1991, 1994, 1997, and 2000 seasons comprise one fishing area rotational group of the three total rotational groups. Discussions in this document do not include any activities in the control areas. Population assessment surveys were conducted in many of the same fishing areas each of these four years. However, if survey results demonstrated very low sea cucumber abundance in any one-year, then that area was generally not sampled in subsequent years. The selection of fishing areas was decided through negotiation with the sea cucumber industry with an emphasis on providing areas each year near the major communities within the range of commercially viable sea cucumber populations. These communities are Ketchikan, Craig, Wrangell, Petersburg, and Sitka. To provide for stability in the industry, areas were further adjusted to provide for an equal amount of guideline harvest level in each year for each of the three rotations. Once an area was included as part of one fishing area rotational group, it remained attached to that rotation and was not subsequently surveyed or fished as part of another rotational group.

Transect pairs were systematically distributed along the shorelines of each survey area. The location of the first transect pair was randomly chosen, and subsequent transect pairs were located at equal intervals along the shoreline. The distance between transect pairs equals the total length of shoreline divided by the number of transect pairs allocated to each area. The number of transects conducted during each survey may vary to achieve the precision goal of exceeding 70 percent precision 90 percent of the time. Generally the number of transect pairs required to achieve precision goals vary between 15 and 20.

Transect locations are permanent. Most transect locations are revisited each rotational cycle, allowing paired comparisons of densities between years without the added variability, due to location effects, that would result from assigning new locations each year. There are no permanent markers at the transect sites to show the survey team where to dive. Transect sites are located and relocated using nautical charts showing transect locations supplemented by the use of a differential capable global positioning satellite (GPS) navigation device. Relocation is generally accurate to within 20 meters depending on the scale of the nautical chart used. Latitude and longitude coordinates are recorded on site to aid finding the locations in future years.

Average Weights

Individual sea cucumber weights were taken to determine the average weight of cucumbers. Collection of individual cucumber weights in an area addresses two objectives: 1) the comparison of average weights between years can determine if any significant change in size has occurred; and 2) conversion of the population estimate from number of sea cucumbers to biomass of sea cucumbers. There are generally three or four transects in each fishing area that have been sampled for multiple years. At those locations, approximately 25 to 30 sea cucumbers were collected during each survey. In order to obtain a representative sample, 12 to 15 sea cucumbers were collected from all other odd-numbered transects. Individual sea cucumbers were eviscerated, drained, and then weighed to the nearest gram.

Statistical Analysis

The average number of sea cucumbers per linear meter of shoreline, d , was calculated as:

$$d = \sum_{i=1}^n \frac{C_i}{4n}, \quad (1)$$

where:

i = transect index,

C_i = the total count of sea cucumbers in a transect pair, and

n = the number of transect pairs.

Division by 4 takes into account the 2 transects of 2 meters width each.

The variance of the mean, σ_d^2 , is estimated was:

$$\sigma_d^2 = \frac{\sum_{i=1}^n \left(d - \frac{C_i}{4} \right)^2}{(n-1)n}. \quad (2)$$

Confidence limits about d were calculated using a t-value with $n-1$ degrees of freedom.

Average weight for transect i , (W_i) and associated variance of the mean weight (σ_w^2) for m_i sea cucumbers sampled on transect i were estimated as:

$$W_i = \sum_{j=1}^{m_i} \frac{w_{ij}}{m_i}, \quad (3)$$

$$\sigma_w^2 = \frac{\sum_{i=1}^m (W_i - \bar{W})^2}{(m-1)m}. \quad (4)$$

The estimated mean weight for the entire subdistrict (W_A) and associated variance of this mean weight is:

$$W_A = \sum_{i=1}^k \frac{W_i}{k}, \quad (5)$$

$$\sigma_{W_A}^2 = \frac{\sum_{i=1}^k (W_i - W_A)^2}{(k-1)k}, \quad (6)$$

where k is the number of transects where a cucumber sample was taken for weight measurements. A t-test was used to determine if there had been a significant change in average weight for each of the transects where samples were collected 3-years apart, and the paired t-test was used to determine if a significant

change in average weight had occurred over the entire subdistrict. The average weight and precision of this estimate were used to expand the estimated number of sea cucumbers in an area to the biomass of the population.

Biomass estimates and associated precision were estimated as a product of two random variables (Goodman 1960). The total number of sea cucumbers in a subdistrict (N_c) is the product of the average number of sea cucumbers per meter of shoreline and the total estimated length of shoreline (L):

$$N_c = Ld \quad (7)$$

and

$$\sigma_{N_c}^2 = \sigma_d^2 L^2. \quad (8)$$

The shoreline estimate is assumed to be measured without error.

The biomass (B_c) is estimated as:

$$B_c = N_c W_A. \quad (9)$$

Biomass variance is estimated as:

$$\sigma_{B_c}^2 = (\sigma_d^2 W_A^2 + \sigma_{W_A}^2 d^2 - \sigma_d^2 \sigma_{W_A}^2) L^2. \quad (10)$$

Degrees of freedom associated with the t -value for the precision of the biomass estimates are not known, but can be estimated through simulation. The quotas were calculated as the lower 90% confidence limit of the biomass estimate, multiplied by three to account for the three-year rotational openings, and then by 0.064, which is the annual target harvest rate.

Survey Results and Discussion

During the four seasons covered by this report there were 51 total fishing area population assessment surveys and a total of 782 transects completed in 19 unique fishing areas (Figure 1). The number of surveys was 12 in the 1991 and 1997 seasons, 11 in the 1994 season, and 16 in the 2000 season. Areas with low sea cucumber densities were generally not resurveyed and areas with expected higher potential numbers of cucumbers were substituted. Any assessment surveys conducted in a control area during these years are not included in this total and are reported in a separate document. During the first two years of conducting sea cucumber assessment surveys, the emphasis was on practical methods to implement the management plan. This included questions on how to select fishing areas, how to locate and relocate transects, and the most efficient way to conduct the underwater counts. It was soon obvious that there was a significant potential to count smaller sea cucumbers than what would be harvested in the subsequent commercial fishery. In order to base the guideline harvest on available biomass, a direct measure of sea cucumber weights was needed. Several methods of measuring sea cucumbers were explored in 1991 and in 1994 sea cucumbers were weighed individually during the assessment surveys (Larson 1995).

Shoreline length averaged 130,451 linear meters for the 19 unique survey areas. Shoreline lengths ranged from 43,522 meters for area 102-80 to 254,311 linear meters for the combined area 103-21 and 103-30. There was an average of 15 transects in each survey area and an average distance between transects of 8.5 km of shoreline. A total of 42,003 sea cucumbers were observed on these transects during the 51 different surveys. The overall average density was 13.8 sea cucumbers per linear meter of shore. The biomass of sea cucumbers for these four years, for all areas, totaled 35,092,517 pounds (15,932,003 kg) for an annual average of 8,773,129 pounds (3,983,001 kg). The minimum biomass for any one survey area was 145,029 pounds (65,843 kg) for survey area 102-80 and the largest was 4,178,263 pounds (1,896,932 kg) in survey area 106-30. (Tables 1, 2, 3, and 4).

Sea cucumbers densities have ranged from 3.6 sea cucumbers or 1.5 pounds (0.7 kg) per meter of shore in area 113-71, 113-72, and 113-73, to 35.2 sea cucumbers or 18.3 pounds (8.3 kg) per meter of shore in area 106-30 (Figures 2, 3, 4, and 5). The region is bounded on the north and east by fiord-type areas with steep rock cliffs extending from the intertidal zone to very deep water. These areas are subject to low water temperatures, lower salinity, and increased turbidity due to large rivers and glacier melt. These conditions contribute to increased siltation and a dramatically reduced kelp and invertebrate community. Sea cucumbers in these areas are smaller in size and fewer in number in both absolute density and in cucumbers per meter of shore. There are a number of island areas in the northern half of Southeast Alaska which share these conditions. Areas with direct exposure to the ocean swells have very low sea cucumber densities at diver depths and are not included in the assessment surveys (Woodby et al. 2000). Much of the remainder of Southeast Alaska is composed of sheltered bays and channels with considerable subtidal areas of rock, boulders, cobble, gravel, and sand between 0 and 50 feet MLLW. Mud substrate occurs at the head of bays or in areas with restricted circulation.

Sea otters are expanding their range and increasing in number in Southeast Alaska and have apparently caused marked declines in sea cucumber densities. An example of the effect of sea otters on sea cucumber populations can be found in rotation areas 113-71, 113-72, and 113-73. In 1991 sea otters were present in the northern and western Chichagof Island area, the same location as survey area 113-71, 113-72, and 113-73. In 1994 this survey area had the largest decrease (from 6.6 sea cucumbers/meter of shore to 3.6 sea cucumbers/meter of shore) of any two subsequent surveys in this rotation group. Also noted during the 1994 survey was a complete absence of any other large invertebrates such as red urchins or abalone. Areas 113-71, 113-72, and 113-73 have not been resurveyed since 1994 due to the continued presence of sea otters.

During 1990, 1991, and 1992 a variety of types of measurements of individual sea cucumbers were evaluated. Sea cucumber populations decrease dramatically once the area is repopulated by sea otters. In 1994, 1,888 eviscerated sea cucumbers were measured from 36 locations in 11 survey areas. The numbers of sea cucumber and the number of locations have increased each year through 2000, when 2,639 sea cucumbers were weighed from 137 locations within the 14 survey areas. For all areas surveyed in this rotation group there have been a total of 6,949 individual sea cucumbers sampled with an overall average weight of 187 grams. The average survey weights by area have ranged from a minimum of 109 grams in area 101-90 to 272 grams in combined area 106-44, 106-45, and 106-50 (Table 5). The total average weights of sea cucumbers for all areas surveyed every three years have decreased 5 grams or 3% between surveys. Survey average weight changes between subsequent surveys have ranged from a 47-gram increase to a 78-gram decrease. There were eight survey areas with average weights from 1994, 1997, and 2000. In this group, five showed an increase in average weight and three had a decrease in average weight (Figure 6). Minimum and maximum sea cucumber weights range between 6 and 793 grams without obvious modes that may represent year classes. The largest cucumber measured exceeded the next greatest weight of any single cucumber for any survey year by 130 grams. Individual weight frequencies for each survey area are shown in Figure 7. With some exceptions, the trend for sea cucumber abundance in Southeast Alaska is for decreasing size and numbers in the northern and eastern portions of the region.

The exceptions include areas exposed directly to the waves of the open ocean on the western coast or areas with fjord type environments. Detailed maps of all areas surveyed during these four years with location of transects are included in Figures 8 through 27. Geographic coordinates of each transect location are included in Appendix 3. Total numbers of sea cucumbers observed by transect for all years are included in Appendices 4, 5, 6, and 7. Individual weight data by area and year are presented in Appendices 8, 9, and 10.

Observations of sea cucumber densities (cucumbers per m²) within transects by substrate type and vegetative type were made in 4,031 instances. Although there was great variability in cucumber numbers between transects and between areas (the range is from 0 to 186 sea cucumbers per linear meter of shore), the trend was for sea cucumber densities to peak between 4 and 12 meters of depth without regard to substrate type (Figure 28). First in order of substrate type occurrence was rock (1,556 observations) followed by sand (895 observations), cobble (491 observations), gravel (428 observations), mud (397 observations), boulder (116 observations), shell (77 observations), and finally silt (2 observations). The maximum average density of 0.79 cucumbers per square meter occurred at the 4 to 8 meter MLLW depth interval on shell substrate (19 observations). Mud substrate contained the lowest cucumber densities with no cucumbers inhabiting very soft mud at any depth.

SEA CUCUMBER COMMERCIAL FISHERY

Methods

Management Strategy and Regulations

The commercial sea cucumber fishery expanded rapidly in the late 1980s and in 1989 the fishery exceeded the ability of the department to manage by the permit system. The department closed the fishery in May 1990 and reopened it in October 1990 following development of the Southeast Alaska Sea Cucumber Commercial Fisheries Management Plan (5 AAC 38.140). This plan seeks to protect subsistence opportunities and provides for sustained commercial fishing harvests. To protect subsistence opportunities, the cucumber management plan established 18 areas closed to commercial fishing (5 AAC 38.140 (k)). There are also provisions to prevent the use of diving gear in the subsistence (5 AAC 02.020 (1)) and personal use (5 AAC 77.010 (l)(3)) fisheries in those areas.

Fishing areas are opened on a three-year rotational basis. The rationale for rotational fisheries in this instance is to reduce costs: survey and management costs are incurred only once every three years for any fished area. The rotational system was not implemented to allow an area to rest between harvests. That rationale is considered unnecessary where harvest biomass is limited by a conservative exploitation rate approach. As previously described, annual commercial fishery guideline harvest levels are calculated as the lower 90% confidence limit on the biomass estimate, multiplied by three, the rotation factor, and then by 0.064, which is the annual target exploitation rate. The product of the precision level and annual exploitation rate results in an effective exploitation rate of approximately 5% of the point estimate for the total sea cucumber biomass on an annual basis (i.e. 15% on a three-year basis).

Initially, the Sea Cucumber Management Plan provided for a season that began October 1 in 1991 with two 48-hour openings per week. The season was changed to a November opening in 1994, and in order to extend the season, weekly fishing periods were reduced to seven daylight hours on Mondays in November, plus an additional four daylight hours on Tuesdays from December through March. The Alaska Board of Fisheries amended the current version of the Sea Cucumber Management Plan for the 1997 season and again in 2000. The plan now provides for an October 1 opening date with weekly fishing periods of 8:00 a.m. to 3:00 p.m. on Mondays and 8:00 a.m. to 12:00 noon on Tuesdays from October through March. There are also provisions for limiting the numbers of divers per vessel to two, providing fishing period trip limits of 2,000 pounds per person, and limiting gear to SCUBA, surface-supplied systems, or snorkels.

Results

In the 1991, 1994, 1997, and 2000 seasons, the total annual sea cucumber guideline harvest levels (GHL) have ranged from 851,922 pounds (386,772 kg) in 1991 to 1,351,000 pounds (611,312 kg) in 1994 with an average of 1,054,458 pounds (477,452 kg) for all four seasons. The GHL per survey area for all four seasons has averaged 100,065 pounds (45,430 kg) and has varied between a minimum of 17,700 pounds (8,036 kg) in fishing area 102-80 to a maximum of 471,300 pounds (213,970 kg) in fishing area 106-30. The total GHL for the 1991, 1994, 1997, and 2000 seasons was 4,217,832 pounds (1,908,521 kg).

The total 1991, 1994, 1997, and 2000 season commercial catch was 4,247,458 pounds (1,928,346 kg) of eviscerated sea cucumbers. The GHL has been taken by the commercial fishery in 5 to 16 commercial openings each season. The average weekly catches per season averaged 120,166 pounds (54,556 kg) for these four seasons and has increased each year from 54,509 pounds (24,747 kg) in the 1991 season to 231,673 pounds (107,180 kg) in the 2000 season. The exvessel price per pound of eviscerated sea cucumbers has increased each season from \$.81 to \$2.40 per pound. The consistency in allowable harvest and increase in unit value has resulted in a fishery that increased in value each year from a total worth of \$706,435 in 1991 to \$2,780,081 in 2000 (Table 6 and Figure 29).

The average number of harvest divers in these four seasons was 224 with a range between 187 in 1991 to 261 in 1994. Due to the greatly increased number of participants, a license moratorium was passed into law by the Alaska Legislature to prevent new participants in the sea cucumber fishery. The license moratorium was in effect from July 1, 1996 to June 30, 2000 and capped the number of potential divers at 472 (the total number of unique divers landing sea cucumbers during the 1994 and 1995 seasons). Due to the effect of the moratorium, 226 divers landed sea cucumbers in 1997 and 220 landed sea cucumbers in 2000. On July 1, 2000, the total number of sea cucumber divers eligible to participate in the fishery was set at 436 by the Commercial Fisheries Entry Commission. The time period to apply for permanent licenses extended through May 2001. It is anticipated that approximately 160 licenses will be transferable with the remainder non-transferable.

During the 1991 season, fishing periods began with three-day openings and were adjusted later in the season as necessary for management (Tables 7, 8, and 9). During the 1994 and 1997 seasons, fishing periods were limited to one-day openings early in the season and later opened for one and one-half day openings (Tables 10, 11, 12, 13, 14, 15, and 16). Fishing periods for the 2000 season were again adjusted to allow for 1.5 days per week starting with the October 1 season starting date. The dual effect of moving the fishery into an October 1 season starting date and lengthening the openings to 1.5 days per week allowed the fleet to capitalize on good light, warmer temperatures, and calm wind conditions. In all years, the time allowed at the end of the season for one or more specific fishing areas was reduced from the

maximum allowable. Adjusting the length of the fishing period inseason allows for more control over harvest rate as remaining quota decreases. Fishing season opening and closing dates by fishing area and year are included in Appendix 11.

Overall, catch-per-unit-effort (CPUE) has increased during the four seasons in this rotation where, in most management units, the highest CPUE occurred during the 2000 season (Figure 30). The total average catch per diver day for all areas combined each season has increased from 364 pounds (165 kg) in 1991 to 941 pounds (427 kg) in 2000. This trend is also reflected in the minimum and maximum catch rates for any one fishing area. The minimum average catch per diver day for any one fishing area increased from 183 pounds (83 kg) in 1991 to 503 pounds (228 kg) in 2000, and the maximum catch rate for any one area increased from 608 pounds (276 kg) in 1991 to 1,280 pounds (632 kg) in 1997.

Average Weights

Sea cucumbers landed in the commercial fishery are sampled to estimate the average size of sea cucumbers by area and season. The objective is to weigh 100 individual sea cucumbers each week from each fishing area. These samples are divided as equally as practicable between four different vessels. During the 1991 season, sea cucumbers were commonly landed in five-gallon buckets. Much of the sampling during that year consisted of weighing buckets of sea cucumbers and counting the number of cucumbers (Appendix 12). Individual sea cucumber weights from the 1991, 1994, 1997, and 2000 commercial fisheries are included in Appendices 13 through 16. During these four seasons a total of 17,653 sea cucumbers from the commercial fishery were weighed for a total unweighted average of 206 grams. The minimum average weight for any fishing area was 149 grams from area 101-90 and the maximum average weight was 275 grams from area 101-10 and 101-11. Average annual weights ranged from 194 grams for the 1991 season to 214 grams for the 2000 season (Table 17 and Figure 31). Individual sea cucumbers in the commercial catch are generally greater than 75 grams and the frequency distribution of weights are similar to those from the assessment surveys but without the extreme smaller size ranges (Figure 32). The commercial weights, by fishing area, averages 22 grams (108%) greater than the survey weights (Table 18).

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Table 1. Sea cucumber assessment survey summary, 1991.

Sea Cucumber Quotas 1991-1992 Season

Subdistrict	101-11	101-90	102-20	102-80	103-40	103-80	112-11,21	113-62,66	113-71,72,73	Average	Total
Numbers											
Number of Transects	28	17	17	14	12	18	15	30	15	18	166
Average Density (cucs/m)	15.67	16.13	14.74	17.73	12.25	16.26	7.72	9.41	6.57	12.94	116.47
Variance of Counts	352.28	69.91	126.69	223.01	65.36	500.89	33.85	218.55	190.75	197.92	
Variance of Mean Transect Count	12.58	4.11	7.45	15.93	5.45	27.83	2.26	7.28	12.72	10.62	
Std. Error Mean	3.55	2.03	2.73	3.99	2.33	5.28	1.50	2.70	3.57	3.07	
Percent Precision of Density	70%	83%	75%	70%	74%	57%	74%	62%	27%	66%	
Shoreline Length (m)	154,170	146,956	103,453	43,522	182,107	117,787	124,269	163,981	170,014	134,029	
Population Size (No. of Cucs)	2,415,789	2,370,746	1,524,410	771,738	2,230,811	1,915,675	958,942	1,542,788	1,116,425	1,649,703	14,847,325
Population Size (Millions of Cucs)	2.42	2.37	1.52	0.77	2.23	1.92	0.96	1.54	1.12	1.65	14.85
Weight											
Average Mass (g)	194.5	151	182	111	149	260	201	197	188	181.4	
Transects Sampled for Weights	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	
Variance of Weight Averages	--	--	--	--	--	--	--	--	--	--	
Std. Error Mean Weight	--	--	--	--	--	--	--	--	--	--	
Percent Precision of Weights	--	--	--	--	--	--	--	--	--	--	
Average Mass (lb.)	0.43	0.33	0.40	0.24	0.33	0.57	0.44	0.43	0.41	0.40	
Variance of Average Mass in Pounds	--	--	--	--	--	--	--	--	--	--	
Biomass Calculation											
Total Area Biomass (lb)	1,034,958	787,986	611,443	189,025	730,173	1,096,660	423,498	667,749	463,292	667,198.1	6,004,783
Biomass (lb) Per Meter	6.7	5.4	5.9	4.3	4.0	9.3	3.4	4.1	2.7	5.1	
Total Variance on lb/m	--	--	--	--	--	--	--	--	--	--	
Total Area Biomass (kilograms)	468,307	356,555	276,671	85,532	330,395	496,226	191,628	302,149	209,634	301,899.6	2,717,096
Biomass (kilograms) Per Meter	3.04	2.43	2.67	1.97	1.81	4.21	1.54	1.84	1.23	2.31	
Total Pct. Precision	70%	83%	75%	70%	74%	57%	74%	62%	27%		
Target 3 Year Harvest Rate	19%	19%	19%	19%	19%	19%	19%	19%	19%		
Potential Fishing Quotas	139,620	125,870	88,323	25,263	103,776	119,496	60,022	79,973	23,980	85,147.1	766,324
Actual Guideline Harvest Levels	154,026	158,782	106,546	45,617	66,792	130,458	66,439	78,155	45,107	94,658	851,922

Table 2. Sea cucumber assessment survey summary, 1994.

Sea Cucumber Quotas 1994-1995 Season

Subdistrict	101-10,11	101-90,95	102-20	102-80	103-40	103-80	106-30	109-44,45	112-11,21	113-62,66	113-71,72,73	Average	Total
Numbers													
Number of Transects	14	18	15	13	14	18	15	14	13	20	20	16	174
Average Density (cucs/m)	14.4	16.0	16.3	27.8	19.0	13.0	35.2	3.3	14.8	9.5	3.6	15.7	
Variance of Counts	154.1	108.2	260.6	559.2	78.8	115.6	1031.3	18.2	126.7	397.6	39.7	262.7	
Variance of Mean Transect Count	11.0	6.0	17.4	43.0	5.6	6.4	68.8	1.3	9.7	19.9	2.0	17.4	
Std. Error Mean	3.3	2.5	4.2	6.6	2.4	2.5	8.3	1.1	3.1	4.5	1.4	3.6	
Percent Precision of Density	69%	80%	66%	68%	83%	74%	68%	53%	71%	38%	48%	65%	
Shoreline Length (m)	154,170	146,956	103,453	43,522	182,107	117,787	229,833	80,932	124,269	51,970	170,014	127,728	1,405,013
Population Size (No. of Cucs)	2,224,453	2,351,296	1,686,284	1,211,083	3,460,033	1,536,139	8,086,291	263,029	1,842,527	493,715	614,176	2,160,820	23,769,025
Population Size (Millions of Cucs)	2.22	2.35	1.69	1.21	3.46	1.54	8.09	0.26	1.84	0.49	0.61	2.16	23.77
Weight													
Average Mass (g)	163.25	184.04	201.78	105.73	141.20	260.73	234.59	271.5	212.76	190.95	188.4	195.9	
Transects Sampled for Weights	5	4	3	3	4	4	2	3	4	2	2	3.27	36
Variance of Weight Averages	2900.95	6187.48	146.90	1300.48	280.42	1984.64	1527.06	462.37	47.98	2642.57	70.41	1595.57	
Std. Error Mean Weight	24.09	39.33	7.00	20.82	8.37	22.27	27.63	12.41	3.46	36.35	5.93	18.88	
Percent Precision of Weights	0.77	0.65	0.93	0.63	0.90	0.86	0.64	0.91	0.97	0.41	0.90	0.78	
Average Mass (lb)	0.3596	0.4054	0.4444	0.2329	0.3110	0.5743	0.5167	0.60	0.4686	0.4206	0.41	0.43	
Variance of Average Mass in Pounds	0.0028	0.0075	0.0002	0.0021	0.0003	0.0024	0.0037	0.0007	0.0001	0.0064	0.0002	0.0024	
Biomass Calculation													
Total Area Biomass (lb)	799,871	953,175	749,454	282,046	1,076,079	882,207	4,178,263	157,296	863,460	207,651	254,882	945,853	10,404,383
Biomass (lb) Per Meter	5.2	6.5	7.2	6.5	5.9	7.5	18.2	1.9	6.9	4.0	1.5	6.5	
Total Variance on lb/m	1.978	2.864	3.491	3.871	0.665	2.512	22.688	0.471	2.153	3.968	0.344	4.091	
Total Area Biomass (kilograms)	361,932	431,301	339,120	127,622	486,913	399,189	1,890,617	71,175	390,706	93,960	115,331	427,988	4,707,865
Biomass (kilograms) Per Meter	2.35	2.93	3.28	2.93	2.67	3.39	8.23	0.88	3.14	1.81	0.68	2.94	
Total Pct. Precision	63%	65%	65%	59%	81%	72%	65%	52%	71%	34%	48%	61%	
Target 3 Year Harvest Rate	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	
Potential Fishing Quotas	97,368	119,341	93,980	31,856	168,097	121,590	519,515	15,796	118,308	13,479	23,514	120,258	1,322,843
Actual Guideline Harvest Levels	118,000	123,700	102,700	31,500	152,800	135,100	471,300	18,100	120,900	54,400	22,500	122,818	1,351,000

Table 3. Sea cucumber assessment survey summary, 1997.

Sea Cucumber Quotas 1997-1998 Season

Subdistrict	101-10,11	101-90,95	102-20	102-80	103-40	103-80	106-30	110- 21,22,24	112-11,21	112-41,42	112-43-48	113-62-66	Average	Total
Numbers														
Number of Transects	14	18	16	14	14	18	15	29	14	7	15	19	16	193
Average Density (cucs/m)	12.82	11.71	10.83	13.00	14.04	13.18	31.63	3.97	6.66	19.96	12.10	5.91	12.98	
Variance of Counts	87.87	37.91	91.20	145.08	69.60	238.17	1879.56	13.95	13.56	312.24	256.55	495.83	303.46	
Variance of Mean Transect Count	6.28	2.11	5.70	10.36	4.97	13.23	125.30	0.48	0.97	44.61	17.10	26.10	21.43	
Std. Error Mean	2.51	1.45	2.39	3.22	2.23	3.64	11.19	0.69	0.98	6.68	4.14	5.11	3.69	
Percent Precision of Density	74%	83%	70%	67%	79%	63%	52%	77%	80%	52%	54%	-15%	61%	
Shoreline Length (m)	154,170	146,956	103,453	43,522	182,107	117,787	229,833	141,403	124,269	51,970	121,801	137,344	129,551	1,554,615
Population Size (No. of Cucs)	1,976,680	1,720,610	1,120,202	565,786	2,556,002	1,552,498	7,270,384	561,955	827,720	1,037,544	1,473,792	811,414	1,789,549	21,474,587
Population Size (Millions of Cucs)	1.98	1.72	1.12	0.57	2.56	1.55	7.27	0.56	0.83	1.04	1.47	0.81	1.79	21.47
Weight														
Average Mass (g)	195.0	109.3	170.3	116.4	156.0	248.0	167.6	251.4	211.0	186.7	209.6	199.0	185.0	
Transects Sampled for Weights	5	4	5	5	5	5	5	9	6	6	5	5	5	65
Variance of Weight Averages	7,416	1,309	950	1,010	2,267	1,895	2,580	2,174	639	2,163	1,574	2,999	2,248	
Std. Error Mean Weight	39	18	14	14	21	19	23	16	10	19	18	24	20	
Percent Precision of Weights	70%	73%	88%	81%	79%	88%	79%	91%	93%	85%	87%	81%	83%	
Average Mass (lb)	0.43	0.24	0.38	0.26	0.34	0.55	0.37	0.55	0.46	0.41	0.46	0.44	0.41	
Variance of Average Mass in Pounds	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Biomass Calculation														
Total Area Biomass (lb)	849,065	414,239	420,088	145,029	878,077	847,915	2,683,870	311,173	384,657	426,739	680,373	355,664	699,741	8,396,890
Biomass (lb) Per Meter	5.5	2.8	4.1	3.3	4.8	7.2	11.7	2.2	3.1	8.2	5.6	2.6	5.09	
Total Variance on lb/m	2.30	0.34	0.90	0.84	1.01	4.24	19.27	0.17	0.23	8.16	3.84	5.04	3.86	
Total Area Biomass (kilograms)	384,192	187,438	190,085	65,624	397,320	383,672	1,214,421	140,802	174,053	193,094	307,861	160,934	316,624.8	3,799,498
Biomass (kilograms) Per Meter	2.49	1.28	1.84	1.51	2.18	3.26	5.28	1.00	1.40	3.72	2.53	1.17	2.30	
Total Pct. Precision	63%	73%	69%	63%	72%	62%	49%	76%	79%	50%	53%	-15%	58%	
Target 3 Year Harvest Rate	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	
Potential Fishing Quotas	102,465	57,712	55,333	17,527	121,167	100,693	254,775	45,252	58,349	40,884	68,973	-10,468	76,055	912,660
Actual Guideline Harvest Levels	114,750	67,200	52,090	17,700	119,760	118,220	245,430	NF	47,760	40,100	69,400	NF	89,241	892,410

Table 4. Sea cucumber assessment survey summary, 1994.

Sea Cucumber Quotas 2000-2001 Season

Subdistrict Numbers	101-10,11	101-25	101-30	101-90,95	102-20	102-80	103-21,30	103-80	106-30	109-30	112-11,21	112-41,42	112-43-48	113-62-66	Average	Total
Number of Transects	28	26	15	17	17	14	24	18	18	15	15	15	15	20	18.4	257
Average Density (cucs/m)	11.51	26.64	5.15	14.29	11.22	19.18	11.96	7.11	24.93	3.62	8.12	15.13	9.28	7.10	12.52	
Variance of Counts	121.16	1748.35	22.77	46.56	121.21	347.04	221.31	67.19	446.82	11.28	21.43	183.43	110.45	247.60	265.47	
Variance of Mean Transect Count	4.33	67.24	1.52	2.74	7.13	24.79	9.22	3.73	24.82	0.75	1.43	12.23	7.36	12.38	12.83	
Std. Error Mean	2.08	8.20	1.23	1.66	2.67	4.98	3.04	1.93	4.98	0.87	1.20	3.50	2.71	3.52	3.04	
Percent Precision of Density	76%	59%	68%	85%	68%	65%	66%	64%	73%	68%	80%	69%	61%	34%	67%	
Shoreline Length (m)	154,170	65,561	170,795	99,221	103,453	43,522	254,311	117,787	229,833	87,380	124,269	51,970	121,801	137,344	125,816	1,761,417
Population Size (No. of Cucs)	1,774,332	1,746,822	879,594	1,418,277	1,160,804	834,690	3,041,136	837,596	5,729,864	316,024	1,008,650	786,479	1,130,719	975,142	1,545,724	21,640,130
Population Size (Millions of Cucs)	1.77	1.75	0.88	1.42	1.16	0.83	3.04	0.84	5.73	0.32	1.01	0.79	1.13	0.98	1.55	21.64
Weight																
Average Mass (g)	225.2	234.2	163.8	128.6	174.4	111.6	262.3	270.9	176.4	228.8	177.8	159.6	210.6	199.5	194.6	
Transects Sampled for Weights	16	10	9	9	9	8	10	7	8	6	8	11	9	9	9.2	129
Variance of Weight Averages	5624.03	1777.34	5816.64	1600.03	1854.05	1354.45	9613.62	5660.78	3212.13	1131.76	543.69	1376.55	1511.07	3214.50	3163.62	
Std. Error Mean Weight	18.75	13.33	25.42	13.33	14.35	13.01	31.01	28.44	20.04	13.73	8.24	11.19	12.96	18.90	17.34	
Percent Precision of Weights	89%	92%	78%	86%	89%	84%	84%	85%	84%	91%	93%	90%	91%	87%	87%	
Average Mass (lb)	0.50	0.52	0.36	0.28	0.38	0.25	0.58	0.60	0.39	0.50	0.39	0.35	0.46	0.44	0.43	
Variance of Average Mass in Pounds	0.0017	0.0009	0.0031	0.0009	0.0010	0.0008	0.0047	0.0039	0.0019	0.0009	0.0003	0.0006	0.0008	0.0017	0.0017	
Biomass Calculation																
Total Area Biomass (lb.)	880,310	901,278	317,423	401,896	445,846	205,193	1,756,797	499,816	2,226,827	159,296	395,001	276,422	524,544	428,400	672,789	9,419,049
Biomass (lb.) Per Meter	5.7	13.7	1.9	4.1	4.3	4.7	6.9	4.2	9.7	1.8	3.2	5.3	4.3	3.1	5.213	
Total Variance on lb/m	1.284	18,455	0.276	0.394	1.171	1.780	3.701	1.513	4.912	0.202	0.240	1.642	1.649	2,455	2,834	
Total Area Biomass (kilograms)	398,330	407,818	143,631	181,853	201,740	92,848	794,931	226,161	1,007,614	72,080	178,734	125,078	237,350	193,846	304,430	4,262,013
Biomass (kilograms) Per Meter	2.58	6.22	0.84	1.83	1.95	2.13	3.13	1.92	4.38	0.82	1.44	2.41	1.95	1.41	2.36	
Total Pct. Precision	74%	59%	62%	79%	66%	62%	63%	61%	70%	67%	79%	68%	60%	33%	65%	
Target 3 Year Harvest Rate	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	
Potential Fishing Quotas (lb)	124,962	101,863	37,771	61,183	56,876	24,345	213,359	58,875	297,150	20,432	60,108	35,874	60,323	27,391	84,322	1,180,511
Actual Guideline Harvest Levels	125,000	101,900	NF	61,200	56,900	24,300	213,400	58,900	297,200	NF	60,100	35,900	60,300	27,400	93,542	1,122,500

Table 5. Sea cucumber assessment survey weights for the 1991, 1994, 1997, and 2000 seasons.

Sea Cucumber Assessment Survey Average Weights, 1991, 1994, 1997, and 2000 Seasons

Subdistricts	91/92			94/95			97/98			00/01		
	N	Avg (g)	Stddev	N	Avg (g)	Stddev	N	Avg (g)	Stddev	N	Avg (g)	Stddev
101-10,11	n/s	n/s	n/s	201	168	76	221	186	87	311	215	97
101-25	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	149	235	65
101-30	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	120	145	61
101-90	182	134	54	166	158	72	190	111	47	269	140	78
102-20	n/s	n/s	n/s	158	204	62	181	162	55	223	179	71
102-80	n/s	n/s	n/s	233	105	60	242	115	53	208	117	57
103-21,30	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	168	262	90
103-40-001	n/s	n/s	n/s	170	140	38	208	149	59	n/s	n/s	n/s
103-80	n/s	n/s	n/s	147	257	71	140	247	72	146	272	90
106-30	n/s	n/s	n/s	197	238	54	180	152	64	194	160	70
109-30	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	92	231	70
109-44,45,50	n/s	n/s	n/s	117	267	92	n/s	n/s	n/s	n/s	n/s	n/s
110-21,22,24	n/s	n/s	n/s	n/s	n/s	n/s	140	258	70	n/s	n/s	n/s
112-11,21	n/s	n/s	n/s	166	212	48	176	209	65	194	180	51
112-41,42	n/s	n/s	n/s	n/s	n/s	n/s	243	172	51	219	157	50
112-43,44,45,46,47,48	n/s	n/s	n/s	n/s	n/s	n/s	150	206	54	197	202	49
113-62,63,64,65,66	n/s	n/s	n/s	178	192	68	169	177	57	149	192	67
113-71,72,73	n/s	n/s	n/s	155	188	39	n/s	n/s	n/s	n/s	n/s	n/s
Survey Totals	182	134	54	1,888	194	62	2,240	179	61	2,639	192	69
Total Weighted Average		187					Annual Average			188	(Not Including 1991)	

Table 6. Commercial sea cucumber fishery performance in Southeast Alaska for 1991, 1994, 1997, and 2000 area rotations.

Season	Guideline Harvest Limit in Numbers	Guideline Harvest Limit in Pounds	Average Commercial Weight in Pounds	SE Total Catch in Numbers	SE Total Catch in Pounds	Price Per Pound	SE Total Exvessel Value	SE Total Number of Divers	SE Total Number of Days Open
1991-92	1,998,000	859,140	0.43	1,997,100	872,142	\$0.81	\$706,435	187	56
1994-95	2,936,957	1,351,000	0.46	2,874,370	1,322,210	\$1.78	\$2,353,534	261	29.5
1997-98	1,975,287	892,419	0.45	1,980,423	894,739	\$1.67	\$1,490,046	226	10.5
2000-01	2,610,465	1,122,500	0.43	2,693,877	1,158,367	\$2.40	\$2,780,081	220	7

Table 7. Southeast Alaska sea cucumber harvest by area and week, 1991–1992 season.

SOUTHEAST ALASKA SEA CUCUMBER HARVEST, 1991/1992										
	Catch Per Subdistrict by Week									
Subdistrict	Tree Point	W. Behm Canal	Clarence Strait	Cleveland Peninsula	Sukkwan Strait	Boca de Finas	Kelp Bay	Peril Strait	Khaz Bay	Total
Subdistrict	101-10,11	101-90,95	102-20	102-80	103-40-001	103-80	112-11,21	113-62,63,64,65,66	113-71,72,73	
Quota (Numbers)	379,000	394,000	239,000	121,000	138,000	259,000	149,000	175,000	101,000	1,955,000
Quota (Pounds)	154,026	158,782	106,546	45,617	66,792	130,458	66,439	78,155	45,107	851,922
40		43,801	2,602		6,479	0	15,677	9,545	78,104	
41		62,645	16,327		11,677	6,802	25,995	22,690	146,136	
42		39,004	37,788		100,334	17,577	17,365	5,395	217,463	
43	4,876	16,627	0			24,321	5,947		67,420	
44	94,571	closed		20,806	40,997		17,742	5,768		182,492
45	71,989				8,465		closed	5,579		90,079
46	closed		14,488	6,377	3,292			1,988	8,166	34,311
47		5,262			4,660			2,927	closed	13,466
48				7,574				closed		10,947
49		0								6,341
50					3,843					10,395
51			closed			closed				8,795
52										2,532
53		0								0
1		0								0
2			closed							3,661
Total Catch (Pounds)	171,436	162,077	113,721	43,030	65,311	118,490	66,442	81,246	50,389	872,142
Percent of Quota	111%	102%	107%	94%	98%	91%	100%	104%	112%	102%
Avg Catch Per Opening	57,145	40,519	7,108	5,379	8,164	39,497	13,288	10,156	7,198	54,509
Avg. % Per Opening	37%	26%	7%	12%	12%	30%	20%	13%	16%	6%
Remaining Catch	-17,410	-3,295	-7,175	2,587	1,481	11,968	-3	-3,091	-5,282	-20,220
Remaining Percent	-11%	-2%	-7%	6%	2%	9%	0%	-4%	-12%	-2%

*Blacked out values are confidential data due to fewer than three participants.

Table 8. Southeast Alaska sea cucumber effort, fishing days, and catch-per-unit-effort, 1991–1992.

SOUTHEAST ALASKA SEA CUCUMBER HARVEST, 1991/1992										
Effort Per Subdistrict by Week										
	Tree Point 101-10,11	W. Behm Canal 101-90,95	Clarence Strait 102-20	Cleveland Peninsula 102-80	Sukkwan Strait 103-40-001	Boca de Finas 103-80	Kelp Bay 112-11,21	Peril Strait 113-62,63,64,65,66	Khaz Bay 113-71,72,73	Total
Subdistrict	101-10,11	101-90,95	102-20	102-80	103-40-001	103-80	112-11,21	113-62,63,64,65,66	113-71,72,73	
40		33	3			4	0	19	9	68
41		50	11			6	8	27	11	113
42		25	14			31	19	16	5	110
43	3	17	9	0		closed	17	11		61
44	32	closed		8	23		11	8		84
45	29				8		closed	10		52
46	closed		12	4	4			3	5	28
47			4		4			5	closed	14
48				3				closed		6
49		0								3
50					4					8
51				closed		closed				2
52										1
53		0								0
1		0								0
2			closed							2

Days Per Fishery by Statistical Week							
40		3	3		3	3	3
41		4	4		4	4	4
42		4	4		3	4	4
43	1	1	4	1	1	4	4
44	4		4	4		3	4
45	3		4	4	4		4
46		4	4	4		4	1
47		4	4	4		4	
48		4	4	4		4	
49		4	4	4		1	
50		4	3	1			
51		4					
52		4					
53		1					
1		3					
2		1					

*Blacked out values are confidential data due to fewer than three participants.

Table 9. Southeast Alaska sea cucumber effort, fishing days, and catch-per-unit-effort, 1991–1992.

Catch (Pounds) Per Diver Per Fishing Day									
40	442	289		540	na	275	354		1,900
41	313	371		487	213	241	516		2,140
42	390	675		1,079	231	271	270		2,916
43	1,625	978	363	na		358	135		4,010
44	739		650	446		538	180		3,205
45	827			265			139		1,957
46		302	399	206			166	1,633	2,705
47		329		291			146		921
48			631						1,155
49		na							1,257
50				961					1,926
51									1,099
52									633
53		na							0
1		na							0
2									1,831
Avg CPUE Per Week	1,064	531	559	486	376	702	335	194	524
Avg Catch/Diver/Day	520	296	352	391	323	608	276	183	327

*Blacked out values are confidential data due to fewer than three participants.

Table 10. Southeast Alaska sea cucumber harvest by area and week, 1994–1995 season.

SOUTHEAST ALASKA SEA CUCUMBER HARVEST, 1994/95												
	Catch Per Subdistrict By Week											
	Tree Point Canal	West Behm Canal	Lower Clarence Strait	Cleveland Peninsula	Sukkwan Straits	Boca de Finas	Snow Pass	Frederick Sound	Kelp Bay	Peril Strait	Khaz Bay	Total
Subdistrict	101-10,11	101-90,95	102-20	102-80	103-40-001	103-80	106-30	109- 44,45,50	112-11,21	113- 62,63,64, 65,66	113- 71,72,73	
Quota	118,000	123,700	102,700	31,500	152,800	135,100	471,300	18,100	120,900	54,400	22,500	1,351,000
46	4,690	5,153	0	0	15,750	50,223	0	4,648	16,237	2,489	99,601	
47	9,957	10,149	2,987		22,197	45,007	0	9,552	14,523	0	116,488	
48	6,484	8,767	2,108		21,308	57,653	0	11,508	0	0	115,264	
49		6,843			2,704	23,644	42,556		7,198	7,741		96,313
50	7,044	15,336	0		34,964	50,106	0	9,048	closed	0	120,745	
51	10,609	17,143	6,102	0	4,026	20,753	81,832	0	17,864		1,724	160,053
52		23,766	0		8,263	closed	69,459	0	17,344			127,307
53	22,499	9,836	0		10,695		70,668	0	11,601		0	125,299
1	25,035	7,438	25,622	8,274	23,518		closed	2,823	26,187		0	118,897
2	43,183	closed	18,596	8,975	19,310			0	16,142			108,125
3	closed		30,703	closed	30,686			0	closed		2,857	64,246
4			closed		47,548			2,302			2,488	52,338
5					closed			10,284			0	10,284
6												2,189
7											1,819	2,451
8								0			2,610	2,610
9								0			closed	closed
10								0				
11								0				
12								0				
13								0				
								closed				
Total Catch (Pounds)	112,850	117,094	96,690	24,006	151,485	138,616	467,504	17,778	123,146	50,009	23,032	1,322,210
Percent of Quota	96%	95%	94%	76%	99%	103%	99%	98%	102%	92%	102%	98%
Avg Catch Per Opening	12,539	13,010	8,790	2,401	12,624	23,103	58,438	1,111	12,315	12,502	1,440	82,638
Avg. % Per Opening	11%	11%	9%	8%	8%	17%	12%	6%	10%	23%	6%	6%
Remaining Catch	5,150	6,606	6,010	7,494	1,315	-3,516	3,796	322	-2,246	4,391	-532	28,790
Remaining Percent	4%	5%	6%	24%	1%	-3%	1%	2%	-2%	8%	-2%	2%

*Blacked out values are confidential data due to fewer than three participants.

Table 11. Southeast Alaska sea cucumber effort, fishing days, and catch-per-unit-effort, 1994–1995.

SOUTHEAST ALASKA SEA CUCUMBER HARVEST, 1994-1995												
Effort Per Subdistrict by Week												
	Tree Point	West Behm Canal	Lower Clarence Strait	Cleveland Peninsula	Sukkwan Straits	Boca de Finas	Snow Pass	Frederick Sound	Kelp Bay	Peril Strait	Khaz Bay	Total
Subdistrict	101-10,11	101-90,95	102-20	102-80	103-40-001	103-80	106-30	109- 44,45,50	112-11,21	113-62,63,64,65,66	113-71,72,73	
46	5	11	[REDACTED]	0	0	19	59	0	5	29	4	134
47	13	17	4	[REDACTED]	[REDACTED]	21	44	0	8	29	0	139
48	8	15	4	[REDACTED]	4	21	51	0	[REDACTED]	29	0	136
49	[REDACTED]	11	[REDACTED]	[REDACTED]	[REDACTED]	21	45	[REDACTED]	8	17	[REDACTED]	111
50	6	18	0	[REDACTED]	[REDACTED]	26	35	0	8	closed	0	97
51	6	20	5	0	5	18	59	0	15		3	131
52	3	29	[REDACTED]	0	8	closed	53	0	13	[REDACTED]	[REDACTED]	109
53	0	24	7	0	11		46	0	8		0	96
1	16	17	23	9	21		closed	4	22		0	112
2	33	closed	14	8	17			0	18	[REDACTED]	[REDACTED]	92
3	closed		45	closed	29			0	closed		3	77
4			closed		46			2			3	51
5					closed			5			0	5
6						[REDACTED]				[REDACTED]	[REDACTED]	3
7											3	4
8							0				3	3
9							0			closed		
10							0					
11							0					
12							0					
13							0			closed		

-continued-

*Blacked out values are confidential data due to fewer than three participants.

Table 11. (page 2 of 2)

Days Per Fishery by Statistical Week												
Subdistrict	Tree Point	West Behm Canal	Lower Clarence Strait	Cleveland Peninsula	Sukkwan Straits	Boca de Finas	Snow Pass	Frederick Sound	Kelp Bay	Peril Strait	Khaz Bay	Total
46	1	1	1	1	1	1	1	1	1	1	1	1
47	1	1	1	1	1	1	1	1	1	1	1	1
48	1	1	1	1	1	1	1	1	1	1	1	1
49	1	1	1	1	1	1	1	1	1	1	1	1
50	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
51	1.5	1.5	1.5	1.5	1.5	1	1.5	1.5	1.5	1.5	1.5	1.5
52	1.5	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	1.5	1.5
53	1.5	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	1.5	1.5
1	1.5	1	1.5	1.5	1.5			1.5	1.5	1.5	1.5	1.5
2	1.5		1.5	1.5	1.5			1.5	1		1.5	
3			1.5		1.5			1.5			1.5	
4					1.5			1.5			1.5	
5								1.5			1.5	
6								1.5			1.5	
7								1.5			1.5	
8								3			1.5	
9								1.5				
10								1.5				
11								1.5				
12								1.5				
13								1.5				

Table 12. Southeast Alaska sea cucumber effort, fishing days, and catch-per-unit-effort, 1994–1995.

Catch (Pounds) Per Diver Per Fishing Day												
46	938	468	[REDACTED]	na	na	829	851	na	930	560	622	5,404
47	766	597	747	[REDACTED]	[REDACTED]	1,057	1,023	na	1,194	501	na	7,103
48	811	584	527	[REDACTED]	676	1,015	1,130	na	[REDACTED]	397	na	7,506
49	[REDACTED]	622	[REDACTED]	[REDACTED]	[REDACTED]	1,126	946	[REDACTED]	900	455	[REDACTED]	9,016
50	783	568	na	[REDACTED]	[REDACTED]	897	954	na	754	[REDACTED]	na	5,371
51	1,179	571	814	na	537	1,153	925	na	794	[REDACTED]	383	6,355
52	[REDACTED]	546	[REDACTED]	na	689	[REDACTED]	874	na	889	[REDACTED]	[REDACTED]	5,375
53	625	937	na	648	[REDACTED]	1,024	[REDACTED]	na	967	[REDACTED]	na	4,201
1	1,043	438	743	613	747	[REDACTED]	[REDACTED]	471	794	[REDACTED]	na	4,847
2	872	[REDACTED]	886	748	757	[REDACTED]	[REDACTED]	na	897	[REDACTED]	[REDACTED]	4,800
3	[REDACTED]	455	[REDACTED]	705	[REDACTED]	[REDACTED]	[REDACTED]	na	[REDACTED]	635	[REDACTED]	1,795
4	[REDACTED]	[REDACTED]	[REDACTED]	689	[REDACTED]	[REDACTED]	[REDACTED]	767	[REDACTED]	553	[REDACTED]	2,009
5	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	1,371	[REDACTED]	[REDACTED]	[REDACTED]	na	[REDACTED]	1,371
6	[REDACTED]	1,297										
7	[REDACTED]	404	[REDACTED]	826								
8	[REDACTED]	na	[REDACTED]	580	[REDACTED]	580						
9	[REDACTED]	na	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]						
10	[REDACTED]	na	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]						
11	[REDACTED]	na	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]						
12	[REDACTED]	na	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]						
13	[REDACTED]	na	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]						
Avg. CPUE/Week	974	558	559	734	691	1,013	966	700	990	478	665	4,241
Avg. Catch/Diver/Day	855	517	624	616	693	990	774	573	873	481	614	[REDACTED]

*Blacked out values are confidential data due to fewer than three participants.

Table 13. Southeast Alaska sea cucumber harvest by area and week, 1997–1998 season.

SOUTHEAST ALASKA SEA CUCUMBER HARVEST, 1997/98											
	Catch Per Subdistrict by Week										
	Tree Point	W. Behm Canal	Lower Clarence Strait	Cleveland Peninsula	Sukkwan Straits	Boca de Finas	Snow Pass	Chatham and Kelp Bay	E. Tenakee Inlet	W. Tenakee Inlet	Total
Subdistrict	101-10,11	101-90,95	102-20	102-80	103-40-001	103-80	106-30	112-11,21	112-41,42	112-43,44,45,46,47,48	
Quota (lbs)	114,750	67,200	52,090	17,700	119,760	118,220	245,430	47,760	40,100	69,400	892,410
41	15,683	7,479	0	0	4,323	20,134	71,063	2,239	13,894	16,002	150,817
42	14,327	12,065	1,019		3,036	23,906	63,664	5,675	7,570	7,550	139,346
43	25,970	7,077	4,713	0	8,774	27,997	59,460	4,024	9,140	2,913	150,068
44	18,245	9,674	7,822		5,216	36,137	73,240	8,787	9,952	0	169,759
45	38,425	27,135	16,268		31,849	closed	closed		closed	12,647	128,788
46	closed	closed	34,688	14,434	24,154			20,697		18,248	112,221
47			closed	closed	32,994			closed		10,746	43,740
					closed				closed		0
Total Catch (Pounds)	112,650	63,430	64,510	18,118	110,346	108,174	267,427	41,422	40,556	68,106	894,739
Percent of Quota	98%	94%	124%	102%	92%	92%	109%	87%	101%	98%	100%
Avg. Catch Per Opening	22,530	12,686	10,752	3,020	15,764	27,044	66,857	8,284	10,139	9,729	111,842
Avg. % Per Opening	20%	19%	21%	17%	13%	23%	27%	17%	25%	14%	13%
Remaining Catch	2,100	3,770	-12,420	-418	9,414	10,046	-21,997	6,338	-456	1,294	-2,329
Remaining Percent	2%	6%	-24%	-2%	8%	8%	-9%	13%	-1%	2%	0%

*Blacked out values are confidential data due to fewer than three participants.

Table 14. Southeast Alaska sea cucumber effort, fishing days, and catch-per-unit-effort, 1997–1998.

SOUTHEAST ALASKA SEA CUCUMBER HARVEST, 1997-1998											
	Effort Per Subdistrict by Week										
	Tree Point	W. Behm Canal	Lower Clarence Strait	Cleveland Peninsula	Sukkwan Straits	Boca de Finas	Snow Pass	Chatham and Kelp Bay	E. Tenakee Inlet	W. Tenakee Inlet	Total
Subdistrict	101-10,11	101-90,95	102-20	102-80	103-40-001	103-80	106-30	112-11,21	112-41,42	112-43,44,45,46,47,48	
41	14	15	0	0	7	25	71	4	23	21	180
42	12	20	3	[REDACTED]	3	26	66	11	12	10	164
43	20	13	5	0	8	27	60	6	12	4	155
44	12	17	7	[REDACTED]	7	35	62	12	13	0	166
45	27	42	15	[REDACTED]	36	closed	closed	0	closed	11	133
46	closed	closed	42	14	32			20		13	121
47			closed	closed	28			closed		10	38
				closed						closed	
Days Per Fishery by Statistical Week											
41	1	1	1	1	1	1	1	1	1	1	
42	1	1	1	1	1	1	1	1	1	1	
43	1	1	1	1	1	1	1	1	1	1	
44	1	1	1	1	1	1	1	1	1	1	
45	1	1.5	1.5	1.5	1.5					1.5	
46			1	1.5	1.5			0.5		1.5	
47					1					1	
Catch (Lbs) Per Diver Per Fishing Day											
41	1,120	499	na	na	618	805	1,001	560	604	762	5,968
42	1,194	603	340	[REDACTED]	1,012	919	965	516	631	755	7,469
43	1,299	544	943	na	1,097	1,037	991	671	762	728	8,071
44	1,520	569	1,117	[REDACTED]	745	1,032	1,181	732	766	na	8,350
45	1,423	431	723	[REDACTED]	590					766	4,754
46			826	687	503			2,070		936	5,022
47					1,178					1,075	2,253
Avg CPUE/Week	1,311	529	790	682	820	949	1,034	910	691	837	5,984
Avg Catch/Diver/Day	1,280	484	792	697	703	957	1,009	952	676	681	

*Blacked out values are confidential data due to fewer than three participants.

Table 15. Southeast Alaska sea cucumber harvest by area and week, 2000–2001 season.

SOUTHEAST ALASKA SEA CUCUMBER HARVEST, 2000/01													
	Catch Per Subdistrict by Week												
	Tree Point	Percy Islands	Behm Canal	Clarence Strait	Cleveland Penn.	Long Island	Heceta Island	Snow Pass	Chatham Strait	Tenakee East	Tenakee West	Peril Strait	Total
Subdistrict	101-10,11	101-25	101-90,95	102-20	102-80	103-21,30	103-80	106-30	112-11,21	112-41,42	112-43,44, 45, 46, 47, 48	113-62, 63, 64, 65, 66	
Quota (lbs)	125,000	101,900	61,200	56,900	24,300	213,400	58,900	297,200	60,100	35,900	60,300	27,400	1,122,500
41	19,379	99,442	3,520	[REDACTED]	[REDACTED]	41,429	16,912	52,184	13,815	8,469	19,519	12,359	288,593
42	51,187	closed	18,311	[REDACTED]	0	27,463	31,293	100,414	8,005	5,082	19,763	20,708	284,690
43	62,387		9,751	5,351	[REDACTED]	57,146	closed	115,234	18,321	23,781	18,430	closed	312,643
44	closed		19,485	25,957	9,799	90,021		73,800	10,264	closed	closed		229,326
45			closed	27,091	3,552	closed	closed	closed	12472	closed			43,115
Total Catch (Pounds)	132,953	99,442	51,067	61,422	16,599	216,059	48,205	341,632	62,877	37,332	57,712	33,067	1,158,367
Percent of Quota	106%	98%	83%	108%	68%	101%	82%	115%	105%	104%	96%	121%	103%
Avg Catch Per Opening	44,318	99,442	12,767	12,284	3,320	54,015	24,103	85,408	12,575	12,444	19,237	16,534	231,673
Avg. % Per Opening	35%	98%	21%	22%	14%	25%	41%	29%	21%	35%	32%	60%	21%
Remaining Catch	-7,953	2,458	10,133	-4,522	7,701	-2,659	10,695	-44,432	-2,777	-1,432	2,588	-5,667	-35,867
Remaining Percent	-6%	2%	17%	-8%	32%	-1%	18%	-15%	-5%	-4%	4%	-21%	-3%

*Blacked out values are confidential data due to fewer than three participants.

Table 16. Southeast Alaska sea cucumber effort, fishing days, and catch-per-unit-effort, 2000–2001.

SOUTHEAST ALASKA SEA CUCUMBER HARVEST, 2000-01													
Effort Per Subdistrict by Week													
	Tree Point	Percy Islands	Behm Canal	Clarence Strait	Cleveland Penn.	Long Island	Heceta Island	Snow Pass	Chatham Strait	Tenakee East	Tenakee West	Peril Strait	Total
Subdistrict	101-10,11	101-25	101-90,95	102-20	102-80	103-21,30	103-80	106-30	112-11,21	112-41,42	112-43,44, 45, 46, 47, 48	113-62, 63, 64, 65, 66	
41	10	55	4			25	14	34	10	7	15	17	193
42	29	Closed	13		0	16	21	66	5	4	14	19	189
43	33		8	4		34	Closed	69	14	17	13	Closed	194
44	Closed		21	18	17	54		56	14	Closed	Closed		180
45		Closed		38	6	Closed		Closed	14				58

Days Per Fishery by Statistical Week												
41	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
42	1.5		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
43	1.5		1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	
44			1.5	1.5	1.5	1.5		1	0.5			
45				1	0.5				0.5			

35

Catch (Lbs) Per Diver Per Fishing Day													
41	1,292	1,205	587			1,105	805	1,023	921	807	868	485	10,140
42	1,177		939		na	1,144	993	1,014	1,067	847	941	727	9,671
43	1,260		813	892		1,121		1,113	872	933	945		8,696
44			619	961	384	1,111		1,318	1,466				5,860
45				713	1,184				1,782				3,679
Avg CPUE/week	1,243	1,205	739	752	747	1,120	899	1,117	1,222	862	918	606	7,609
Avg catch/diver/day	1,231	1,205	740	830	503	1,117	918	1,097	1,094	957	987	612	

*Blacked out values are confidential data due to fewer than three participants.

Table 17. Sea cucumber commercial fishery average weights for the 1991, 1994, 1997, and 2000 seasons.

Sea Cucumber Commercial Weights Summary, 1991, 1994, 1997, and 2000 seasons.												
Subdistricts	91/92			94/95			97/98			00/01		
	N	Avg. (g)	Stddev	N	Avg. (g)	Stddev	N	Avg. (g)	Stddev	N	Avg. (g)	Stddev
101-10,11*	1100	186	n/a	250	202	63	400	233	64	425	275	63
101-25	n/f	n/f	n/f	n/f	n/f	n/f	n/f	n/f	n/f	300	241	60
101-90,95*	2100	184	n/a	615	156	63	475	175	58	500	162	63
102-20*	1940	204	n/a	500	194	65	350	212	74	475	193	65
102-80*	1120	172	n/a	25	159	59	150	234	82	350	166	59
103-21,30	n/f	n/f	n/f	n/f	n/f	n/f	n/f	n/f	n/f	805	230	58
103-40-001	300	221	64	200	229	81	425	198	72	n/f	n/f	n/f
103-80	300	230	50	409	230	63	350	239	58	350	240	74
106-30	n/f	n/f	n/f	810	255	81	100	225	76	400	226	73
112-11,21	78	204	60	200	241	58	350	200	63	250	219	61
112-41,42	n/f	n/f	n/f	n/f	n/f	n/f	253	170	43	200	158	44
112-43,44,45,46,47,48	n/f	n/f	n/f	n/f	n/f	n/f	n/f	n/f	n/f	225	189	60
113-62,63,64,65,66	n/s	n/s	n/s	200	213	77	n/f	n/f	n/f	300	232	77
113-71,72,73	n/s	n/s	n/s	73	181	49	n/f	n/f	n/f	n/f	n/f	n/f
Season Totals	6938	200	58	3282	206	66	2853	210	66	4580	211	63
Total Weighted Avg.	17,653	206		Annual Avg.								

*Subdistricts 101-10, 101-11,101-90, 101-95, 102-20, and 102-80 weights are summed average sample weights and individual sample weights.

Table 18. Comparison of survey and commercial sea cucumber weight, 1991, 1994, 1997, and 2000.

	Weight differences between commercial and survey (g.)					Percent differences commercial vs. survey.				
	1991	1994	1997	2000	Avg.	1991	1994	1997	2000	Avg.
101-10,11	n/s	34.1	46.9	59.7	46.9	n/s	120%	125%	128%	124%
101-25	n/s	n/s	n/s	6.2	6.2	n/s	n/s	n/s	103%	103%
101-30	n/s	n/s	n/s	n/f	n/f	n/s	n/s	n/s	n/f	n/f
101-90	49.9	-1.4	64.5	22.8	28.6	137%	99%	158%	116%	128%
102-20	n/s	-9.6	50.2	14.1	18.2	n/s	95%	131%	108%	111%
102-80	n/s	53.8	119.2	48.1	73.7	n/s	151%	204%	141%	165%
103-21,30	n/s	n/s	n/s	0.2	0.2	n/s	n/s	n/s	100%	100%
103-40-001	n/s	89.0	49.5	n/s	69.2	n/s	163%	133%	n/s	148%
103-80	n/s	-27.1	-8.3	-32.0	-22.5	n/s	89%	97%	88%	91%
106-30	n/s	16.8	72.8	65.9	51.8	n/s	107%	148%	141%	132%
109-30	n/s	n/s	n/s	n/f	n/s	n/s	n/s	n/s	0%	0%
109-44,45,50	n/s	n/f	n/s	n/s	n/s	n/s	n/f	n/s	n/s	n/s
110-21,22,24	n/s	n/s	n/f	n/s	n/s	n/s	n/s	n/f	n/s	n/s
112-11,21	n/s	28.2	-9.8	39.2	19.2	n/s	113%	95%	122%	110%
112-41,42	n/s	n/s	-2.5	1.7	-0.4	n/s	n/s	99%	101%	100%
112-43,44,45,46,47,48	n/s	n/s	n/s	-13.3	-13.3	n/s	n/s	n/s	93%	93%
113-62,63,64,65,66	n/s	21.7	n/f	39.4	30.5	n/s	111%	n/f	120%	116%
113-71,72,73	n/s	-7.0	n/s	n/s	-7.0	n/s	96%	n/s	n/s	96%
Grand Total by Year	49.9	19.8	42.5	21.0	33.3	137%	115%	132%	105%	122%
Grand Total by Area					21.5					108%

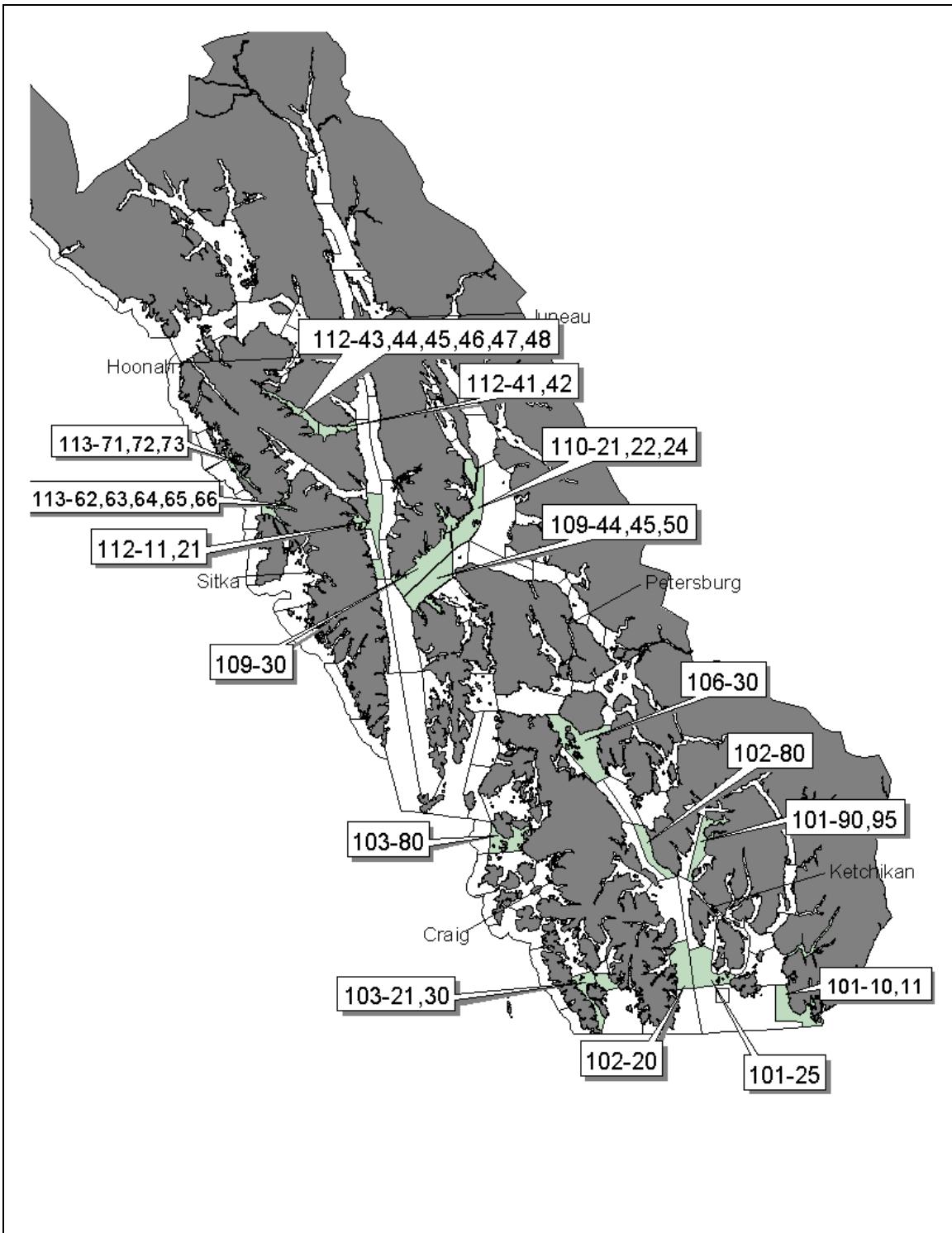


Figure 1. Sea Cucumber survey areas, 1991, 1994, 1997, and 2000.

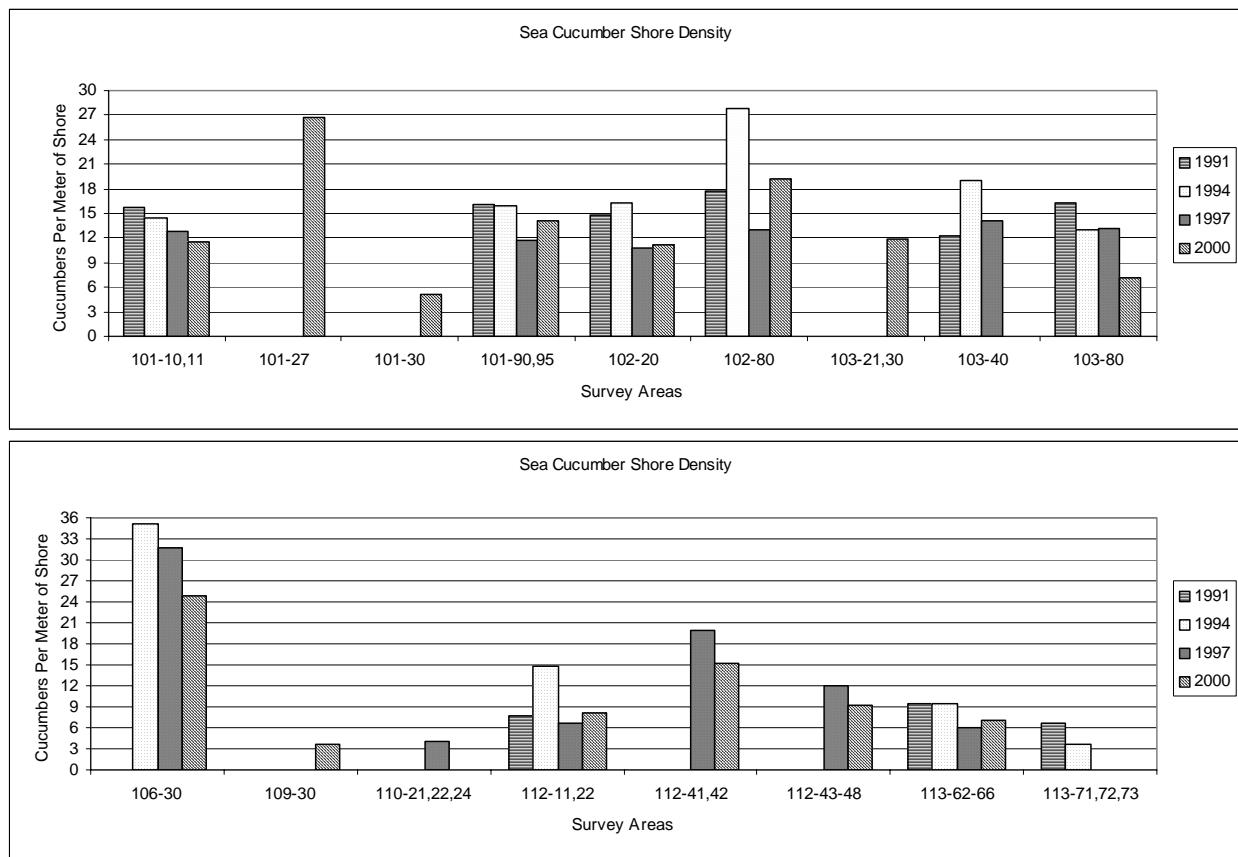


Figure 2. Numbers of sea cucumbers per linear meter of shore in Southeast Alaska, 1991, 1994, 1997, and 2000.

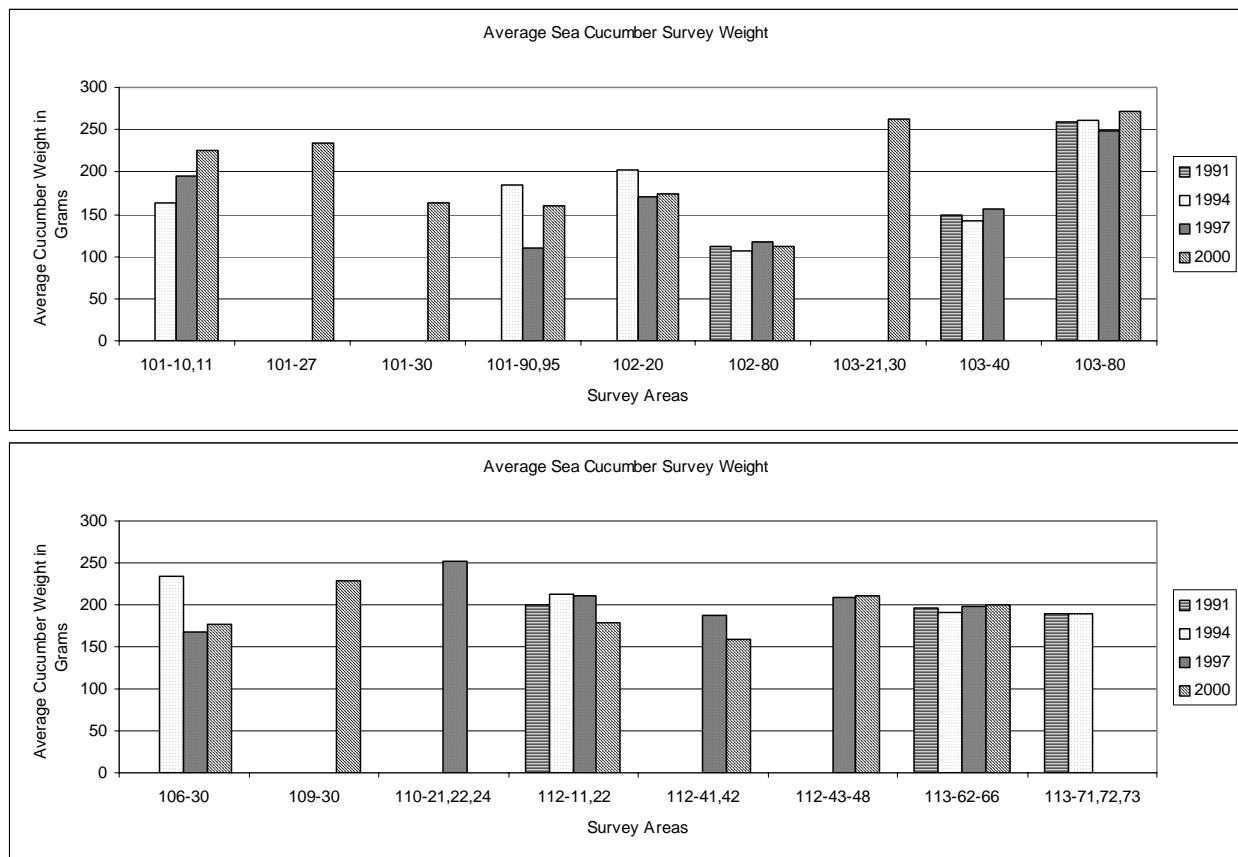


Figure 3. Average weight (g) of sea cucumbers in Southeast Alaska, 1991, 1994, 1997, and 2000.

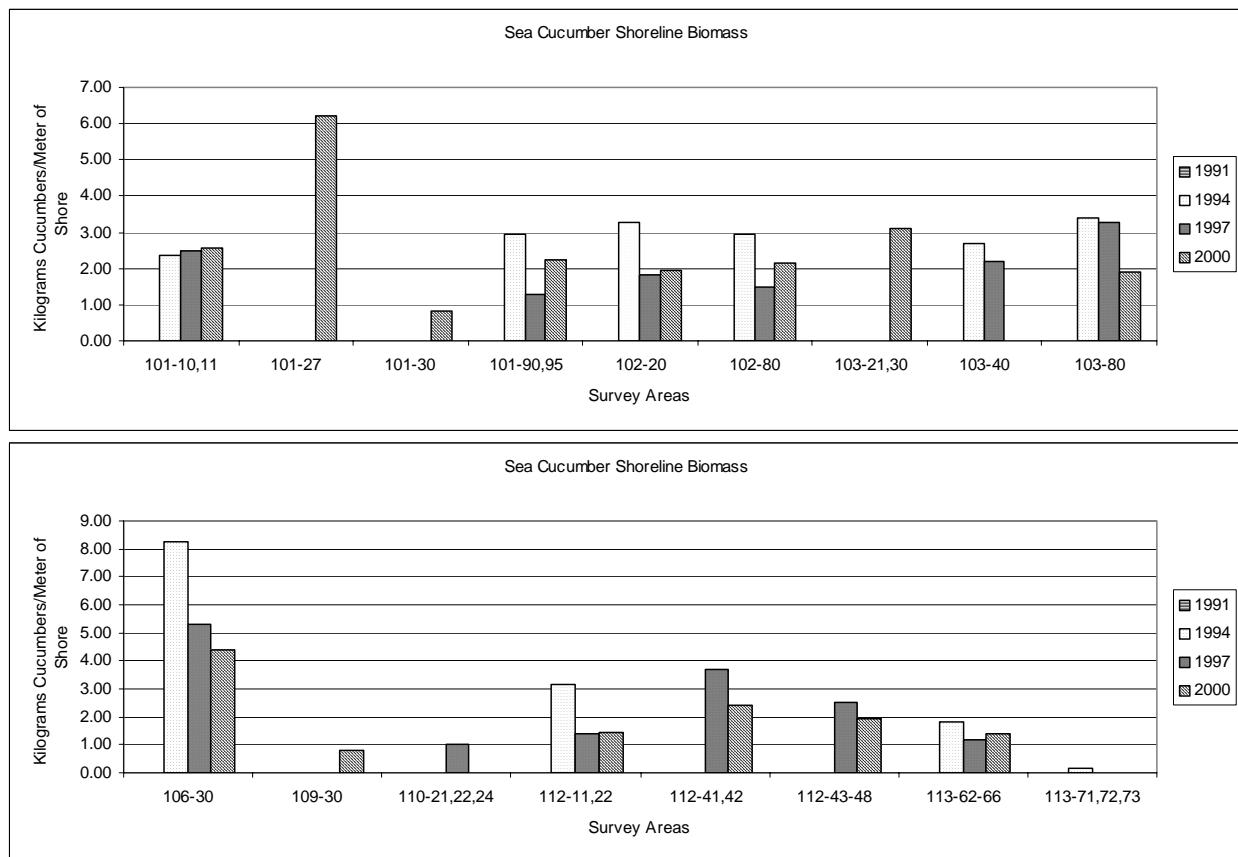


Figure 4. Sea cucumber biomass (kg) per meter of shore in Southeast Alaska 1991, 1994, 1997, and 2000.

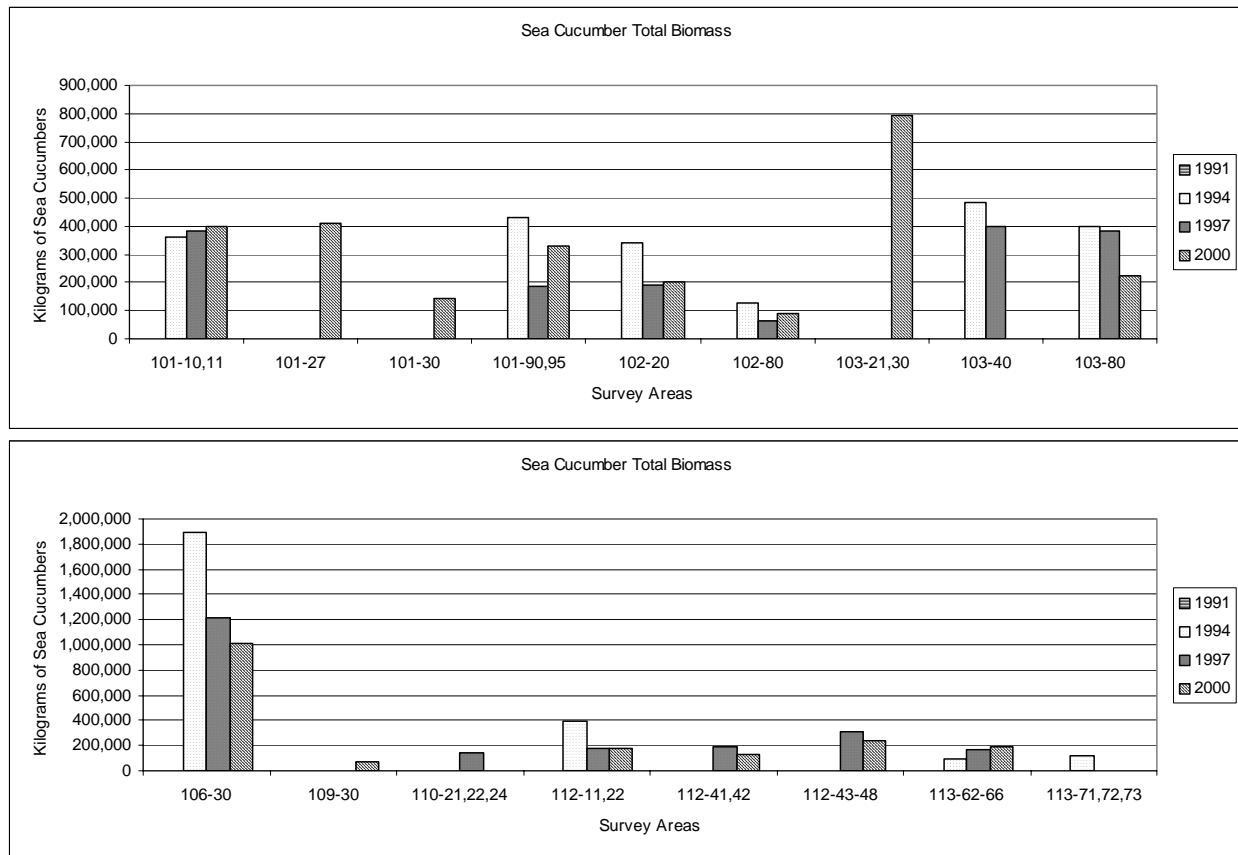


Figure 5. Sea cucumber total biomass (kg) per survey area in Southeast Alaska 1991, 1994, 1997, and 2000.

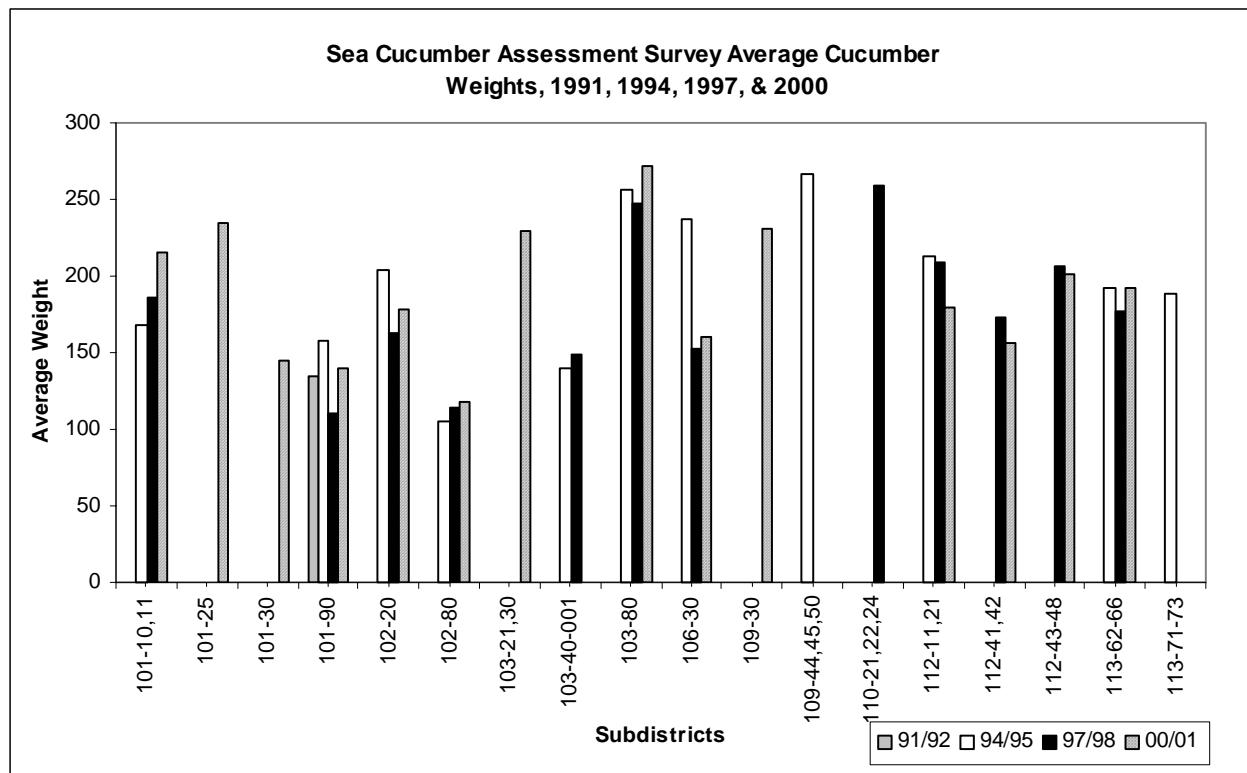


Figure 6. Average sea cucumber assessment survey weights by area and season for 1994, 1997, and 2000.

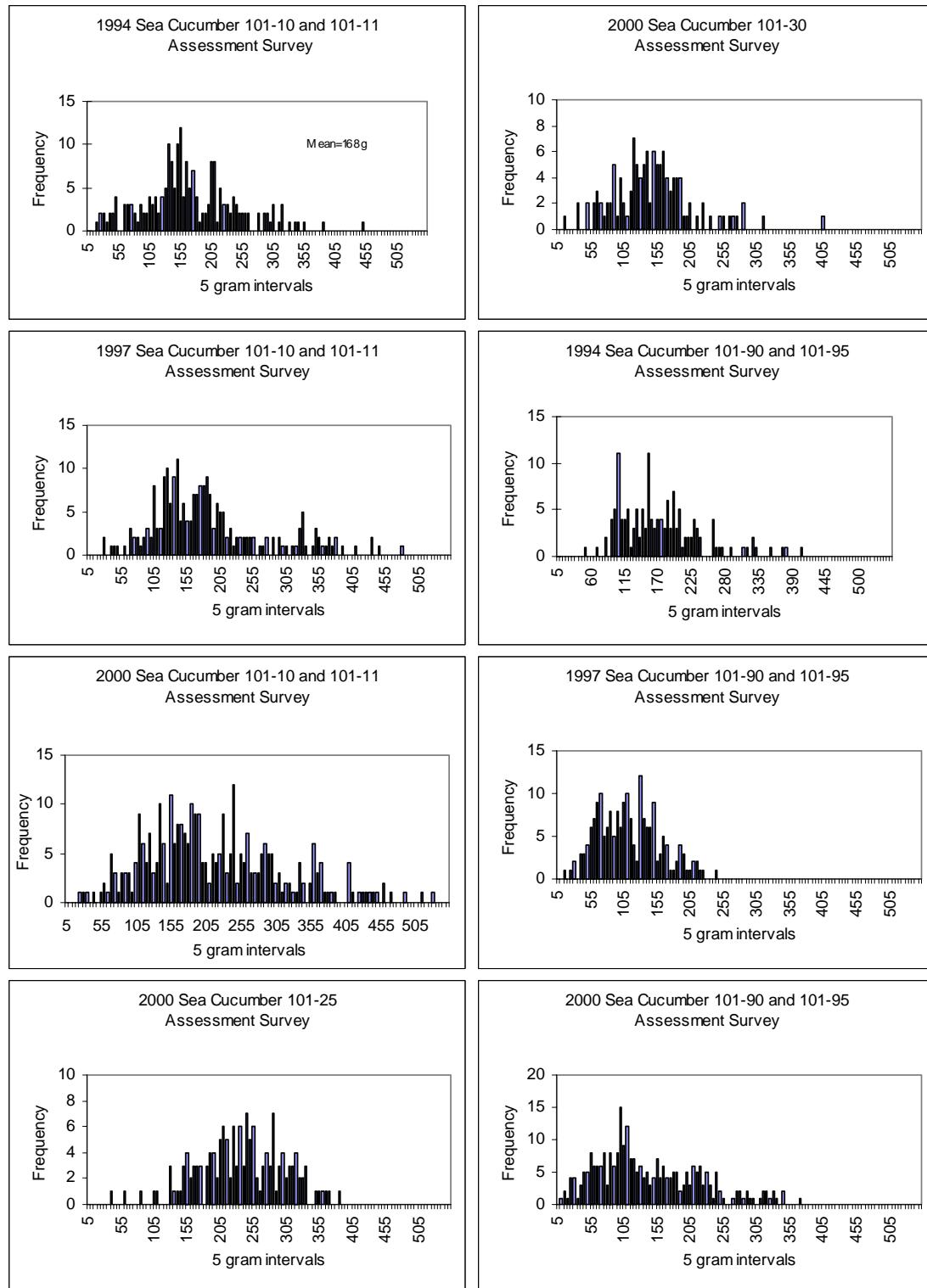


Figure 7. Southeast Alaska sea cucumber weight frequency by area from assessment surveys, 1991, 1994, 1997, and 2000.

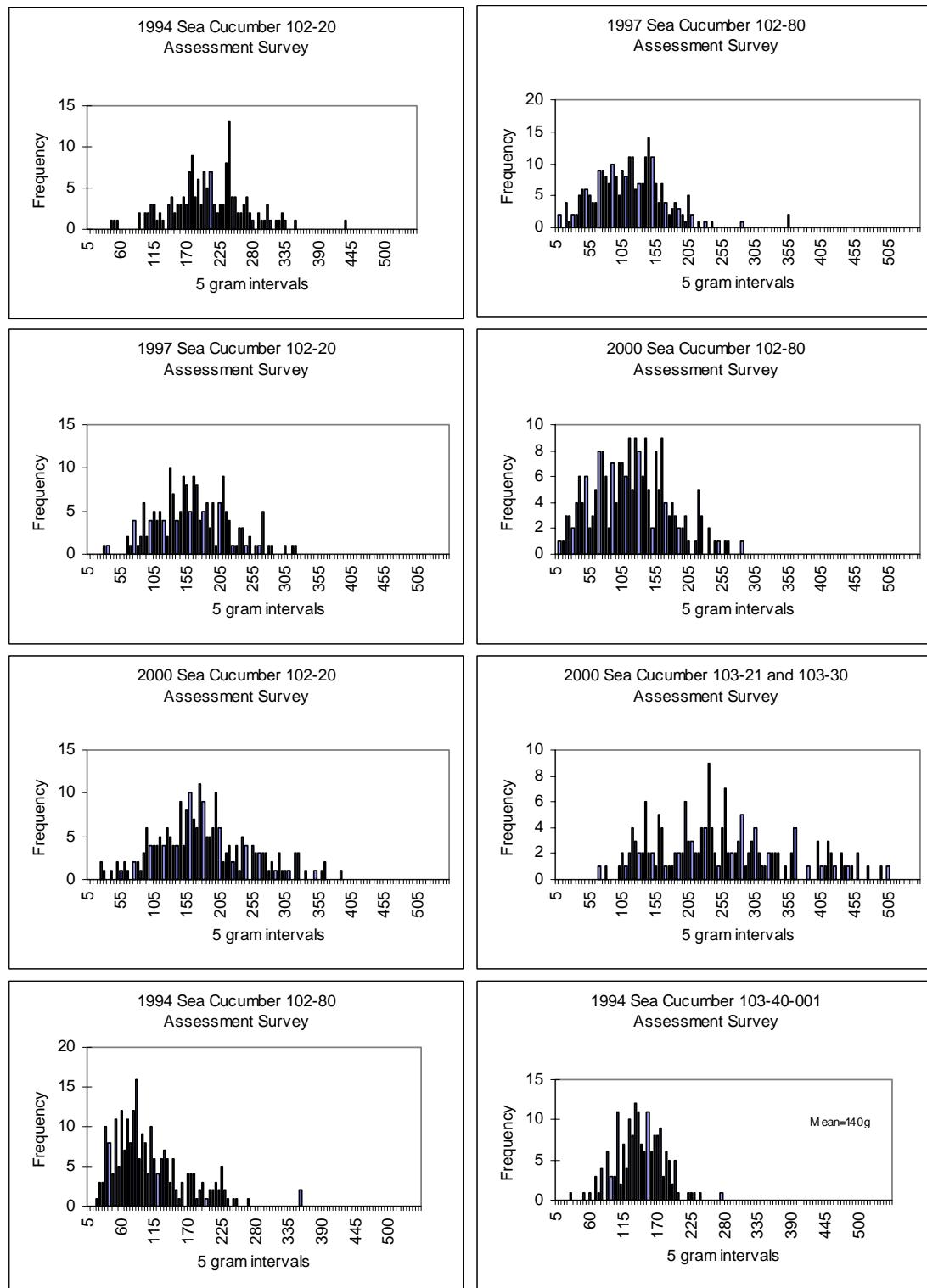


Figure 7. (page 2 of 5)

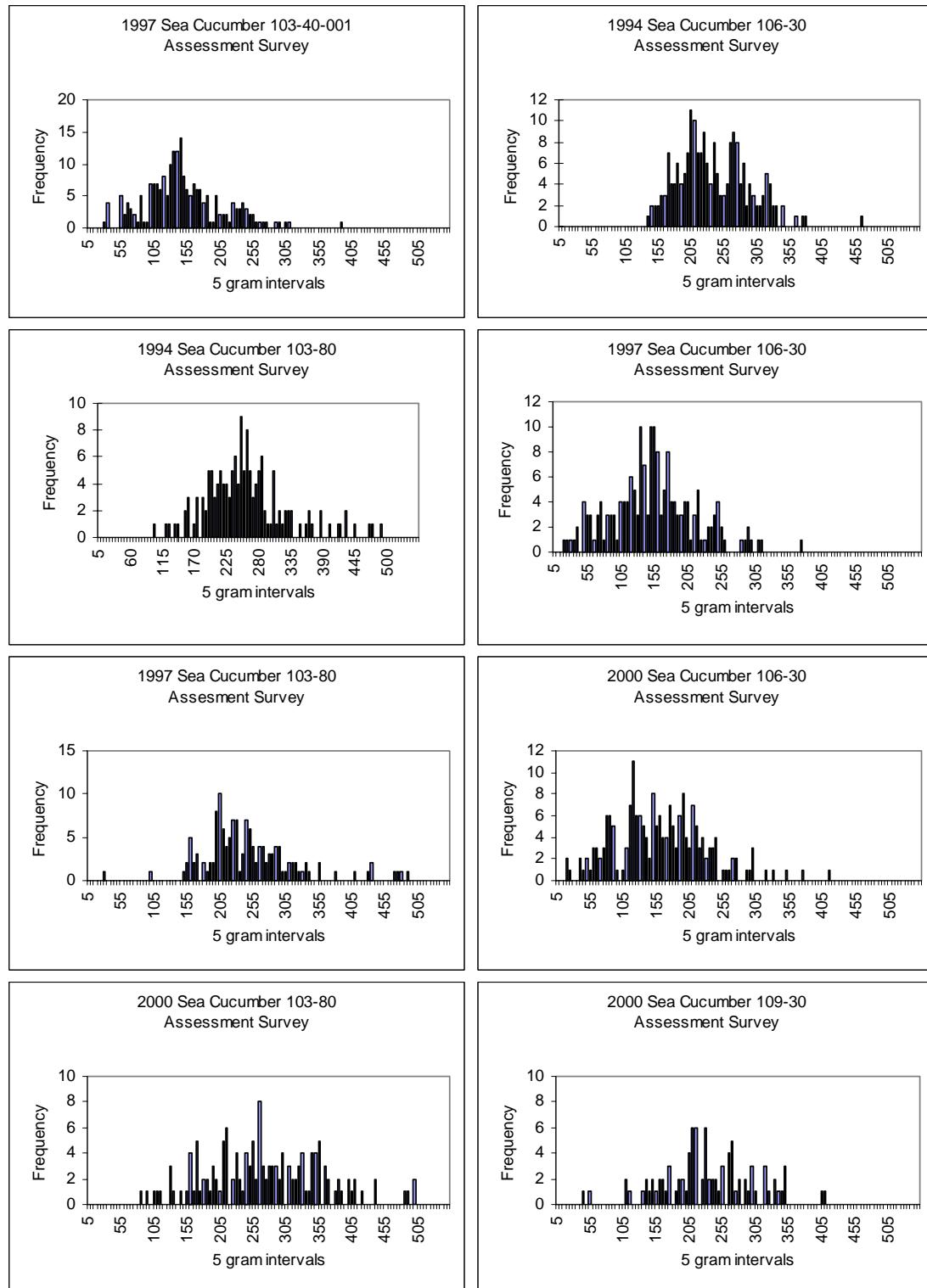


Figure 7. (page 3 of 5)

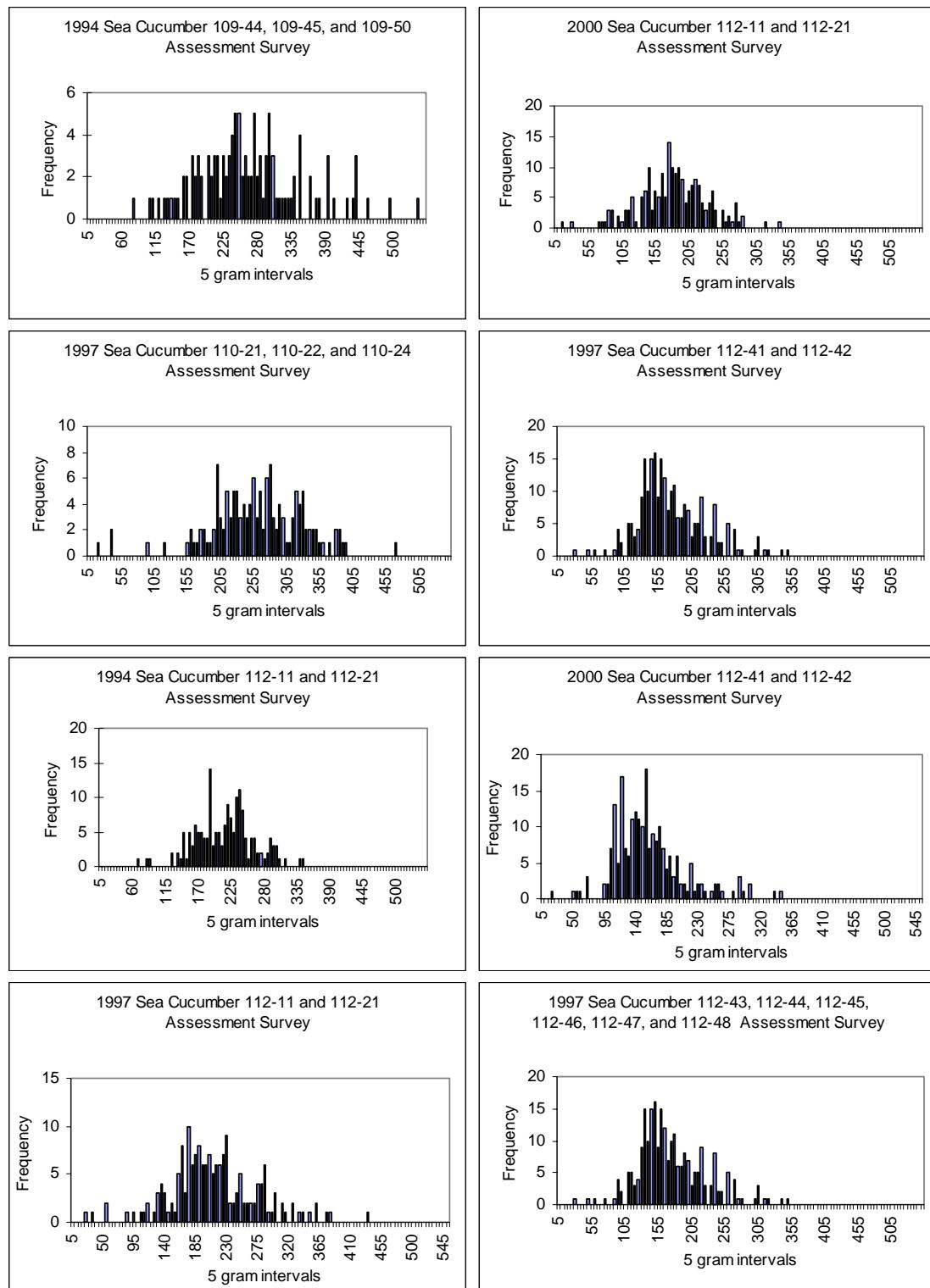


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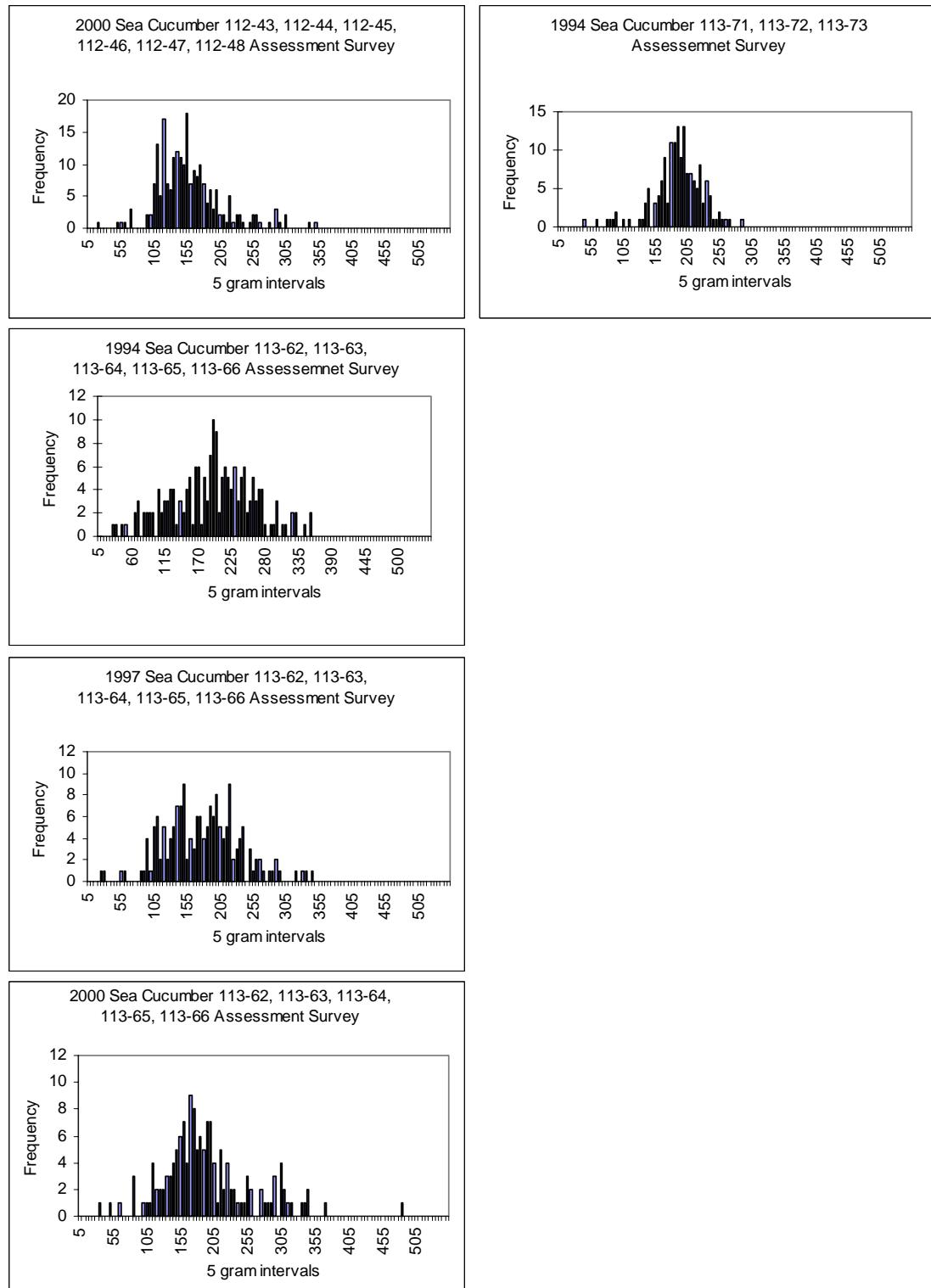


Figure 7. (page 5 of 5)

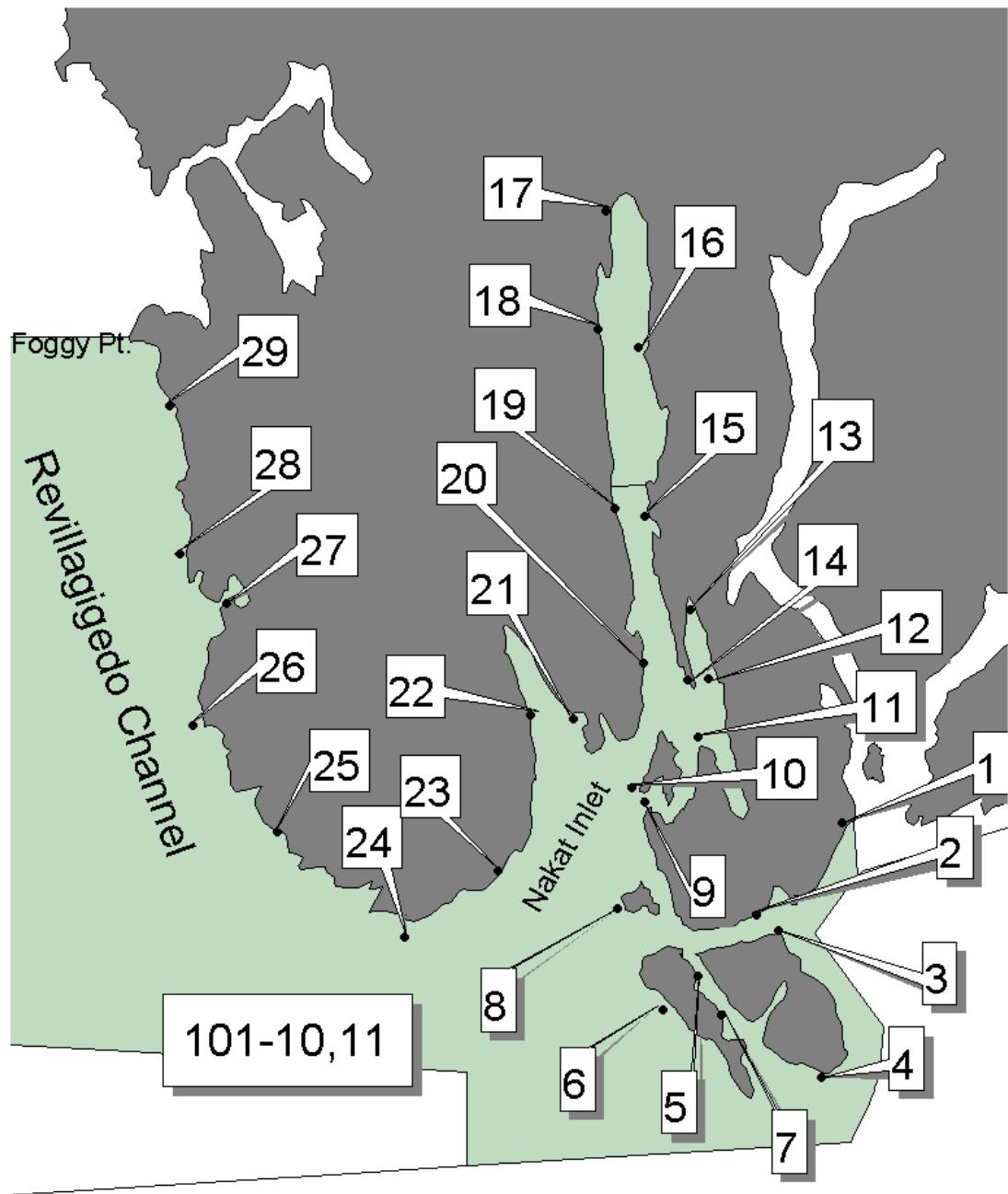


Figure 8. Subdistricts 101-10 and 101-11 sea cucumber survey area and transects surveyed in the 1990, 1994, 1997, and 2000 seasons.

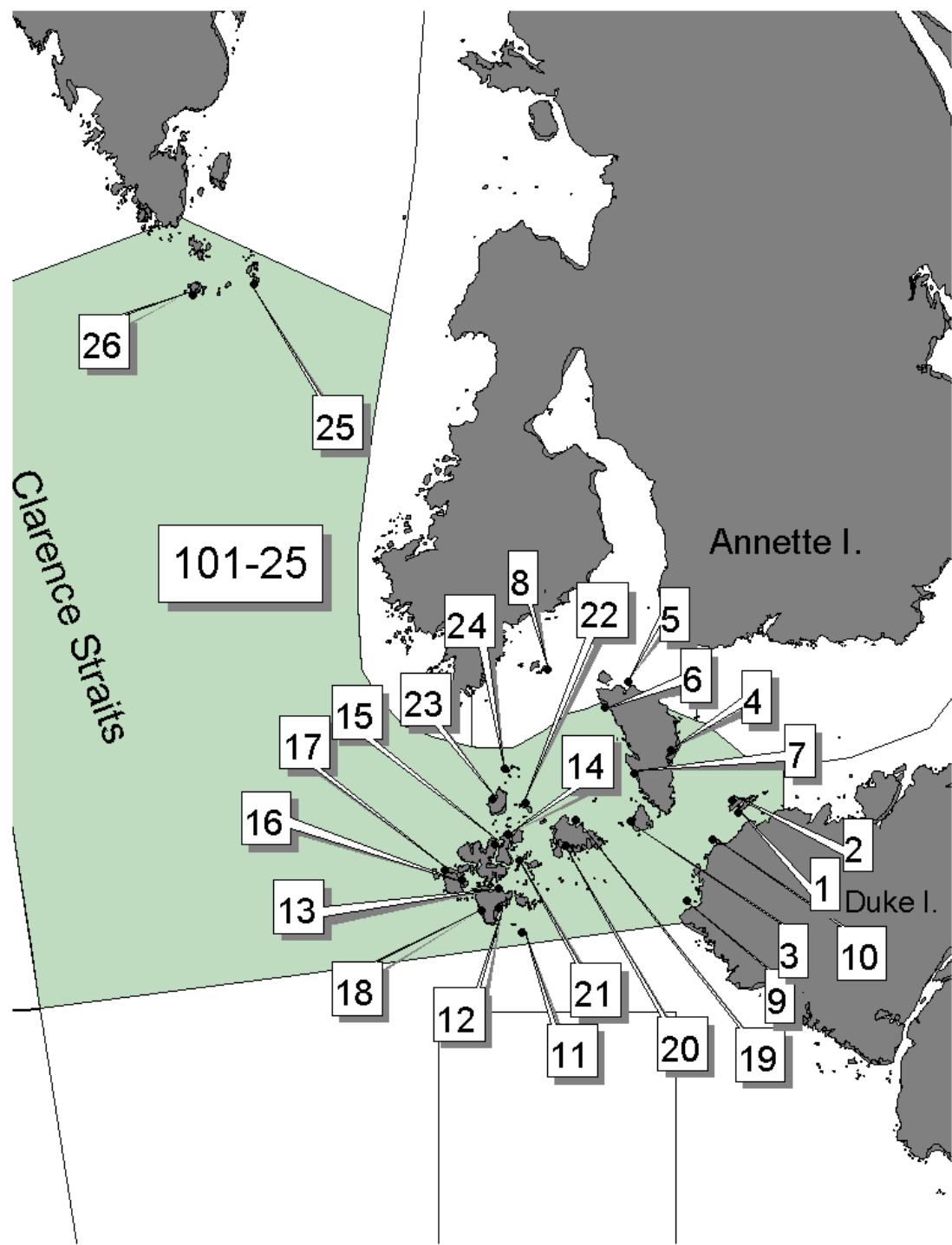


Figure 9. Subdistrict 101-25 sea cucumber survey area and transects surveyed in the 2000 season.

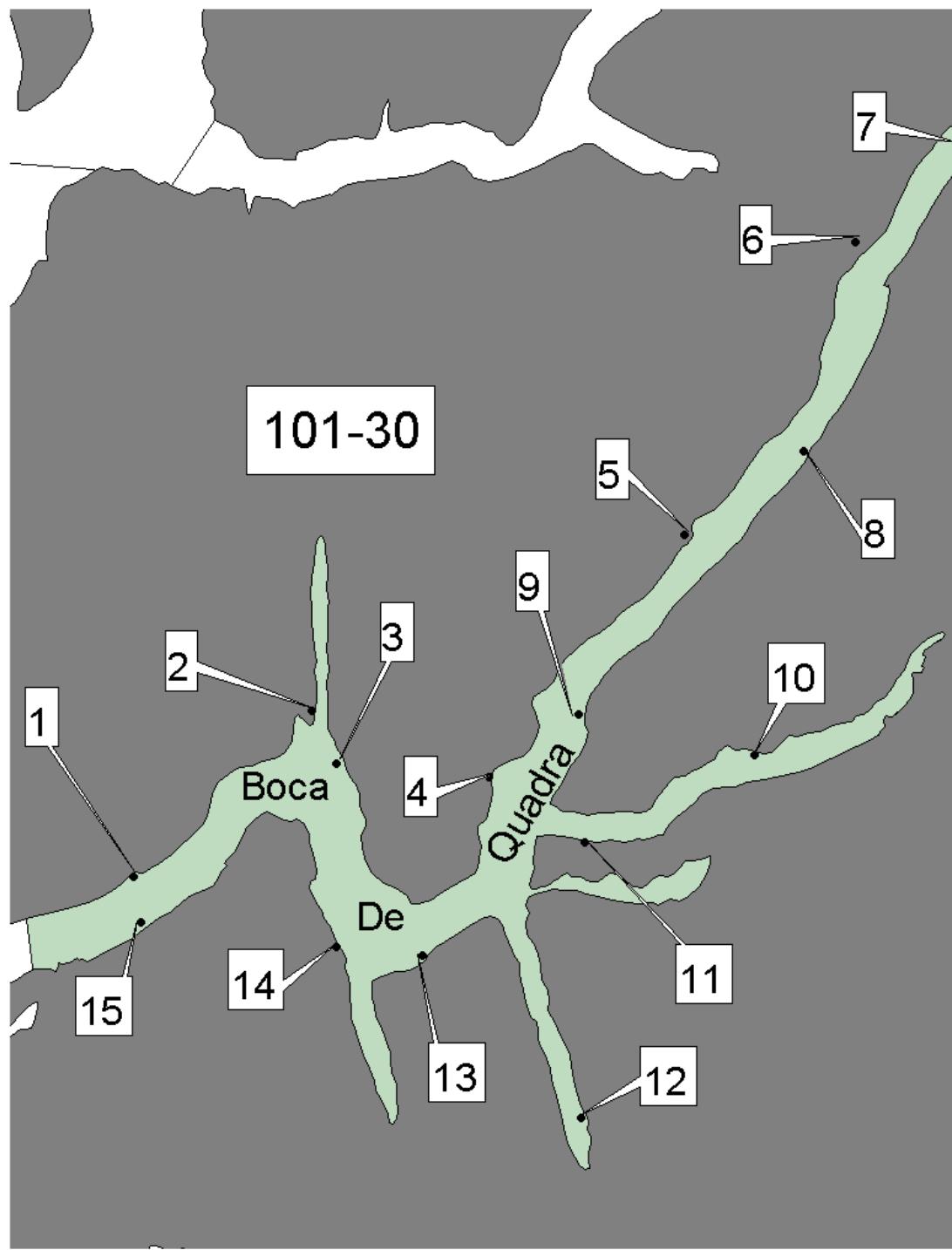


Figure 10. Subdistrict 101-30 sea cucumber survey area and transects surveyed in the 2000 season.

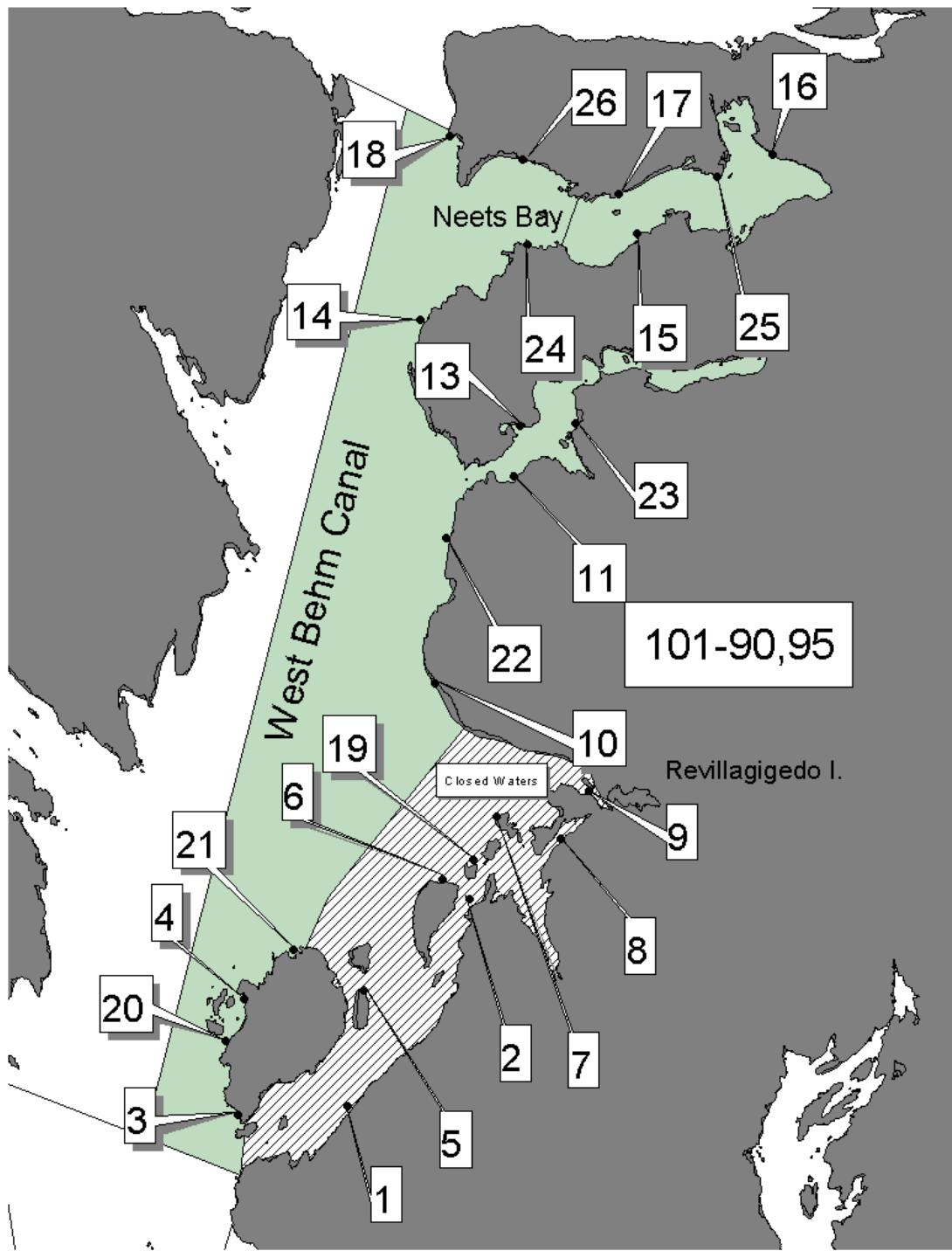


Figure 11. Subdistricts 101-90 and 101-95 sea cucumber survey area and transects surveyed in the 1991, 1992, 1994, 1997, and 2000 seasons.

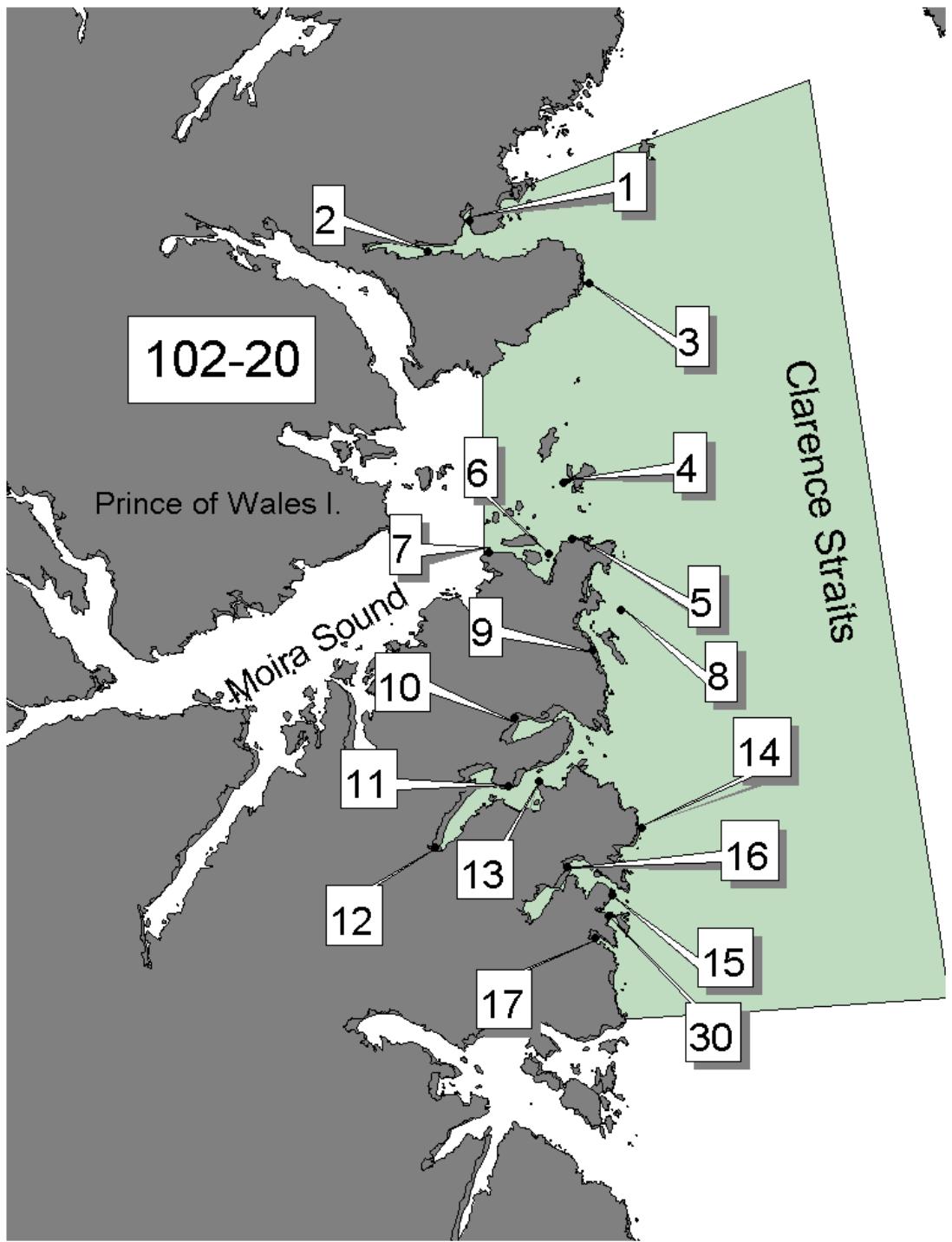


Figure 12. Subdistrict 102-20 sea cucumber survey area, and transects surveyed in the 1991, 1994, 1997, and 2000 seasons.

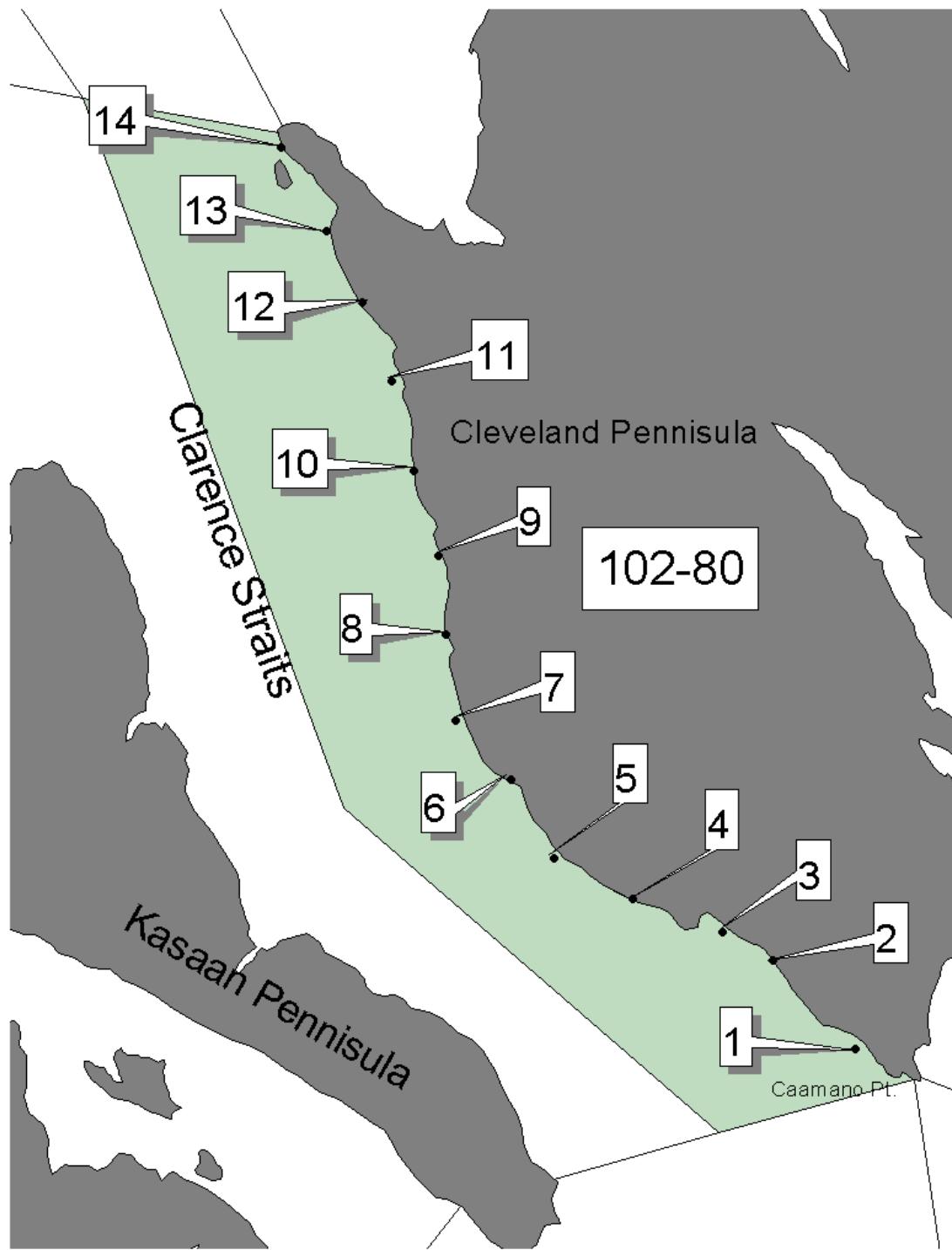


Figure 13. Subdistrict 102-80 sea cucumber survey area and transects surveyed in the 1990, 1994, 1997, and 2000 seasons.

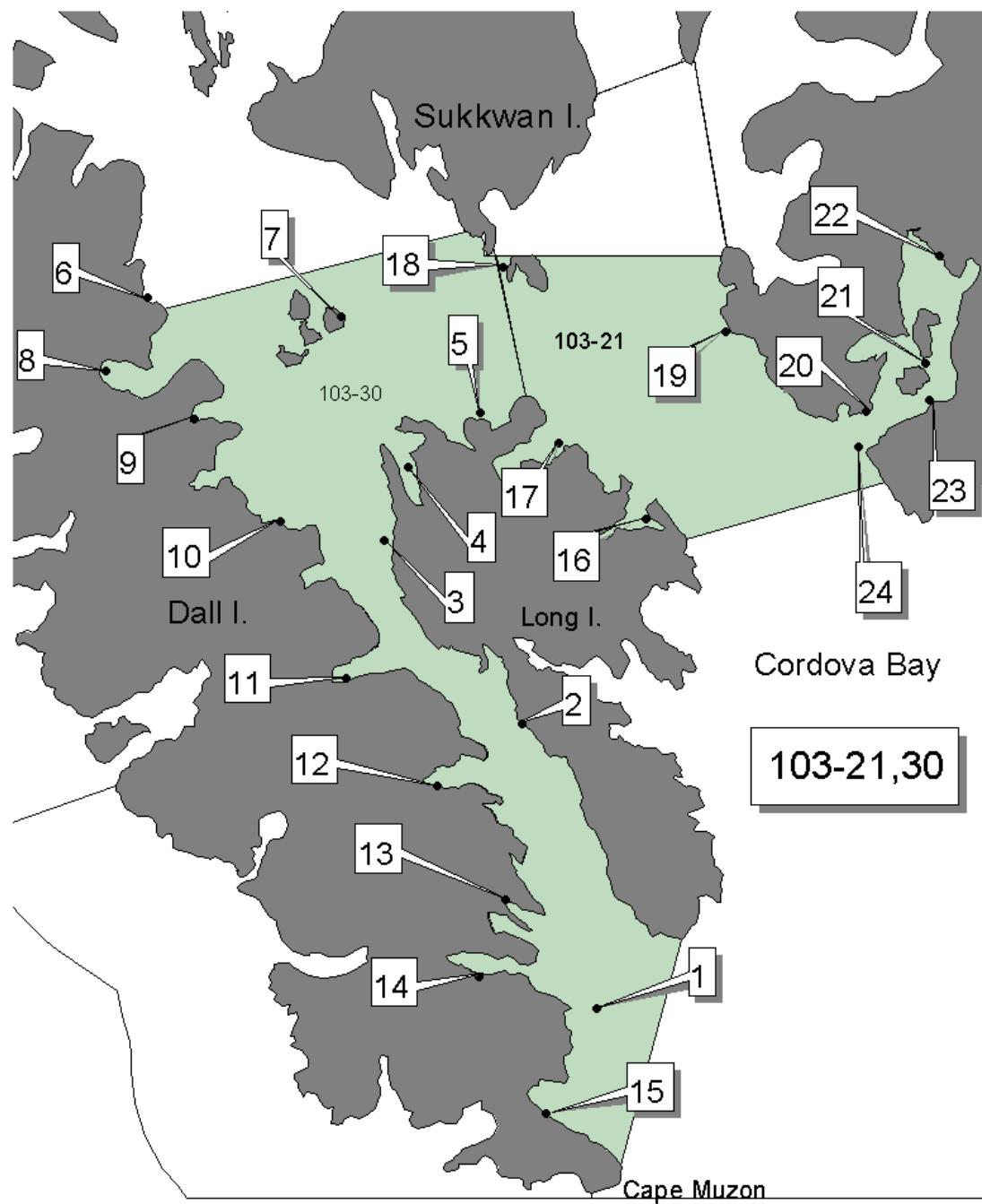


Figure 14. Subdistricts 103-21 and 103-30 sea cucumber survey area and transects surveyed in the 1999 and 2000 seasons.

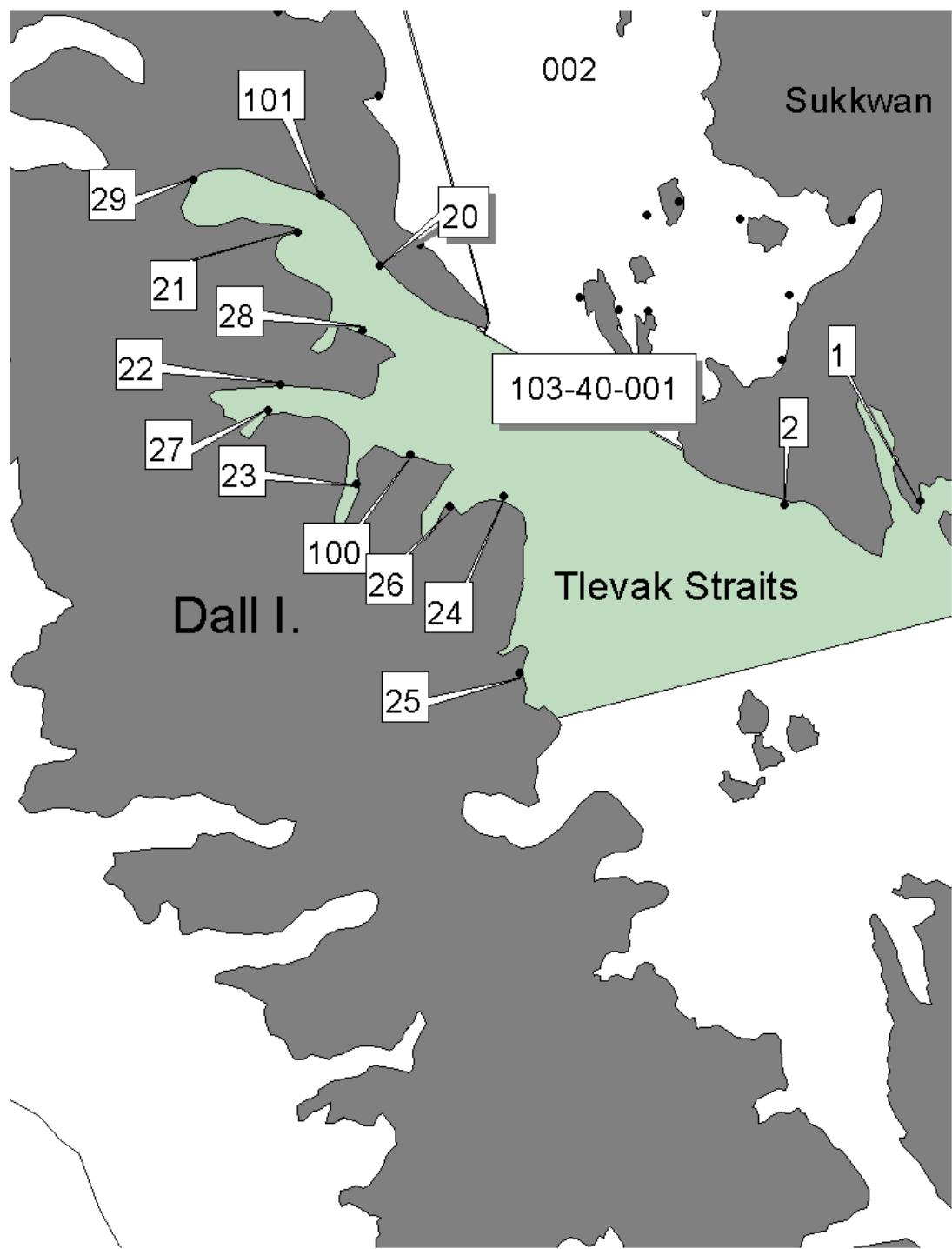


Figure 15. Subdistricts 103-40-001 sea cucumber survey area and transects surveyed in the 1990, 1994, and 1997 seasons.

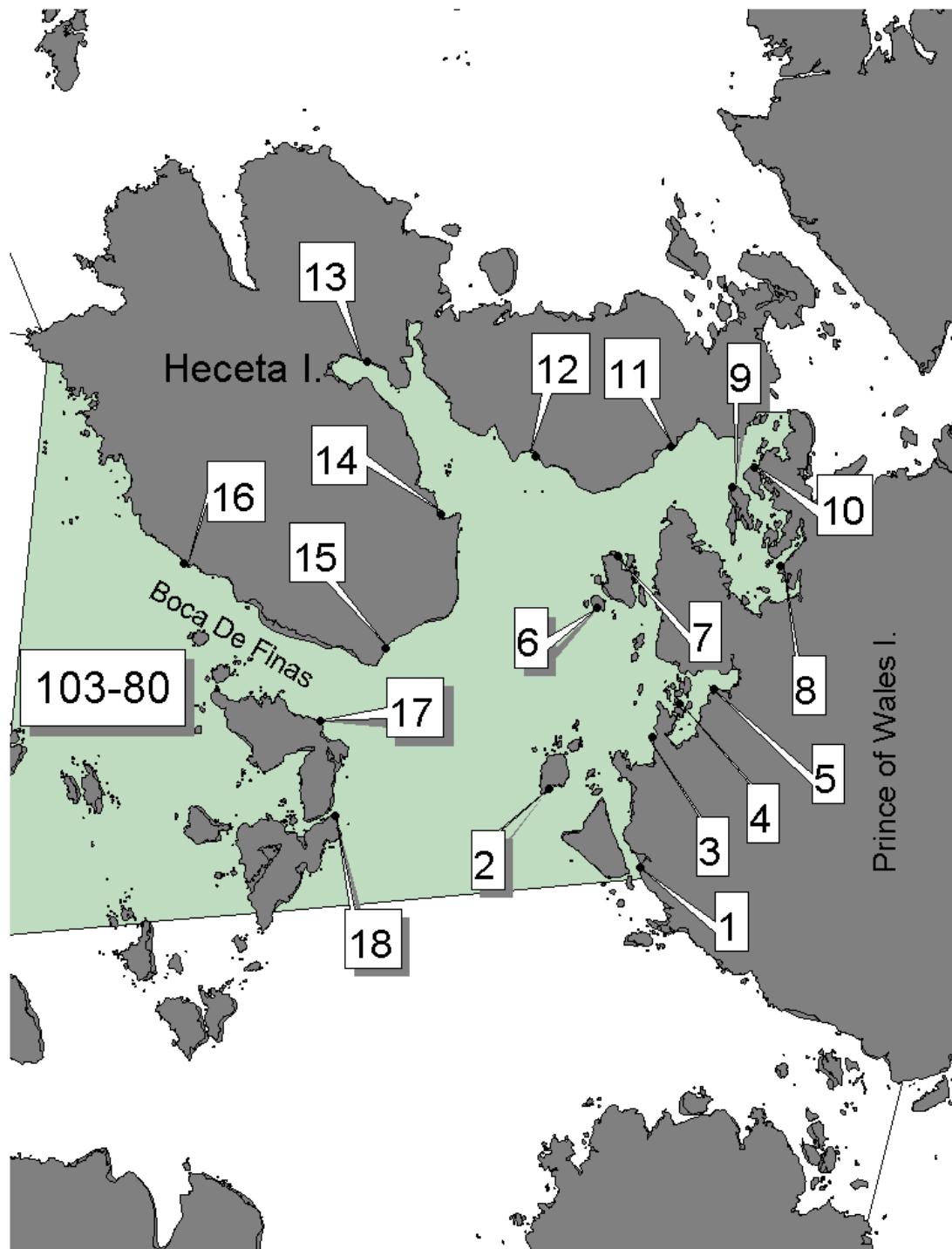


Figure 16. Subdistrict 103-80 sea cucumber survey area and transects surveyed in the 1991, 1994, 1997, and 2000 seasons.

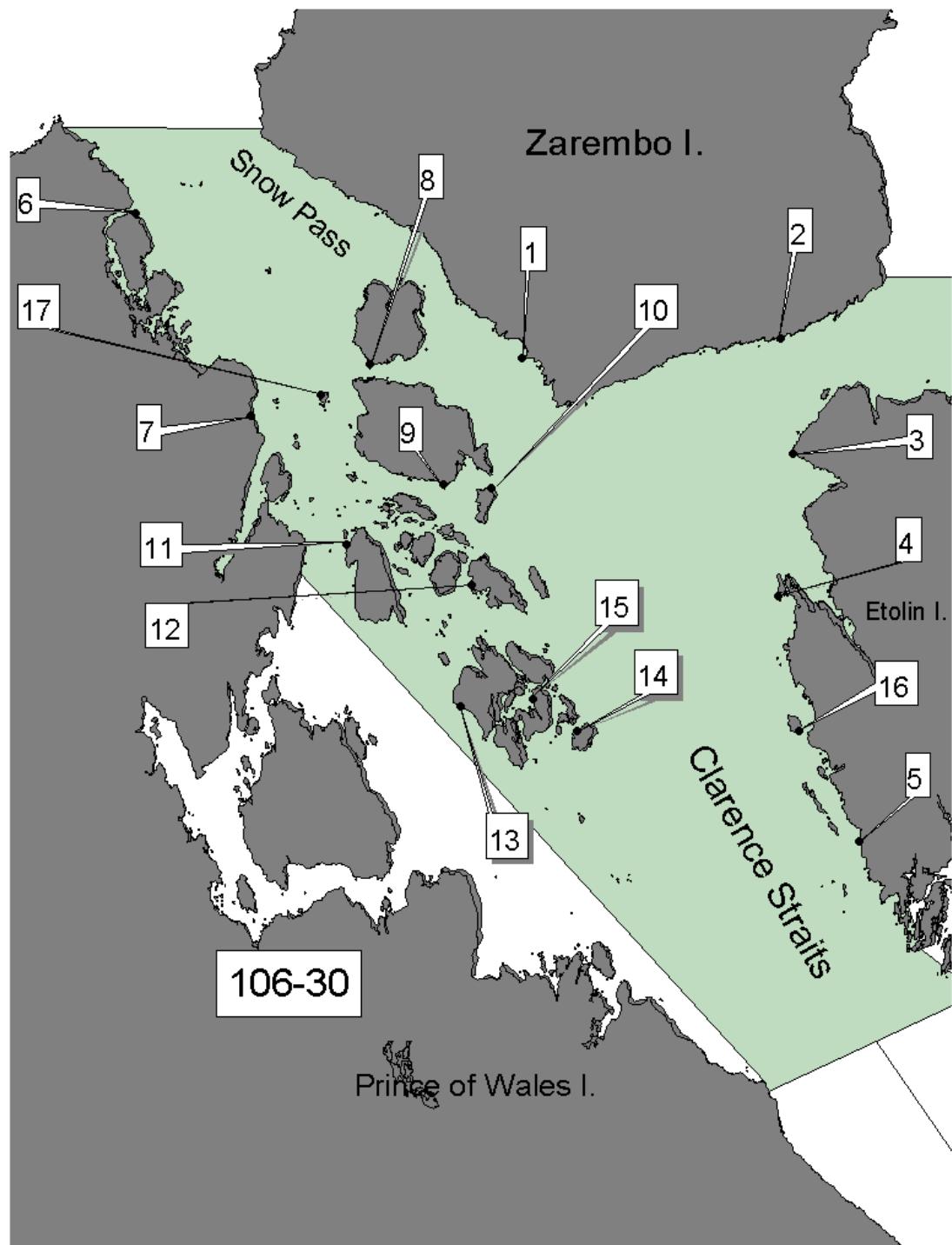


Figure 17. Subdistrict 106-30 sea cucumber survey area and transects surveyed in the 1994, 1997, and 2000 seasons.

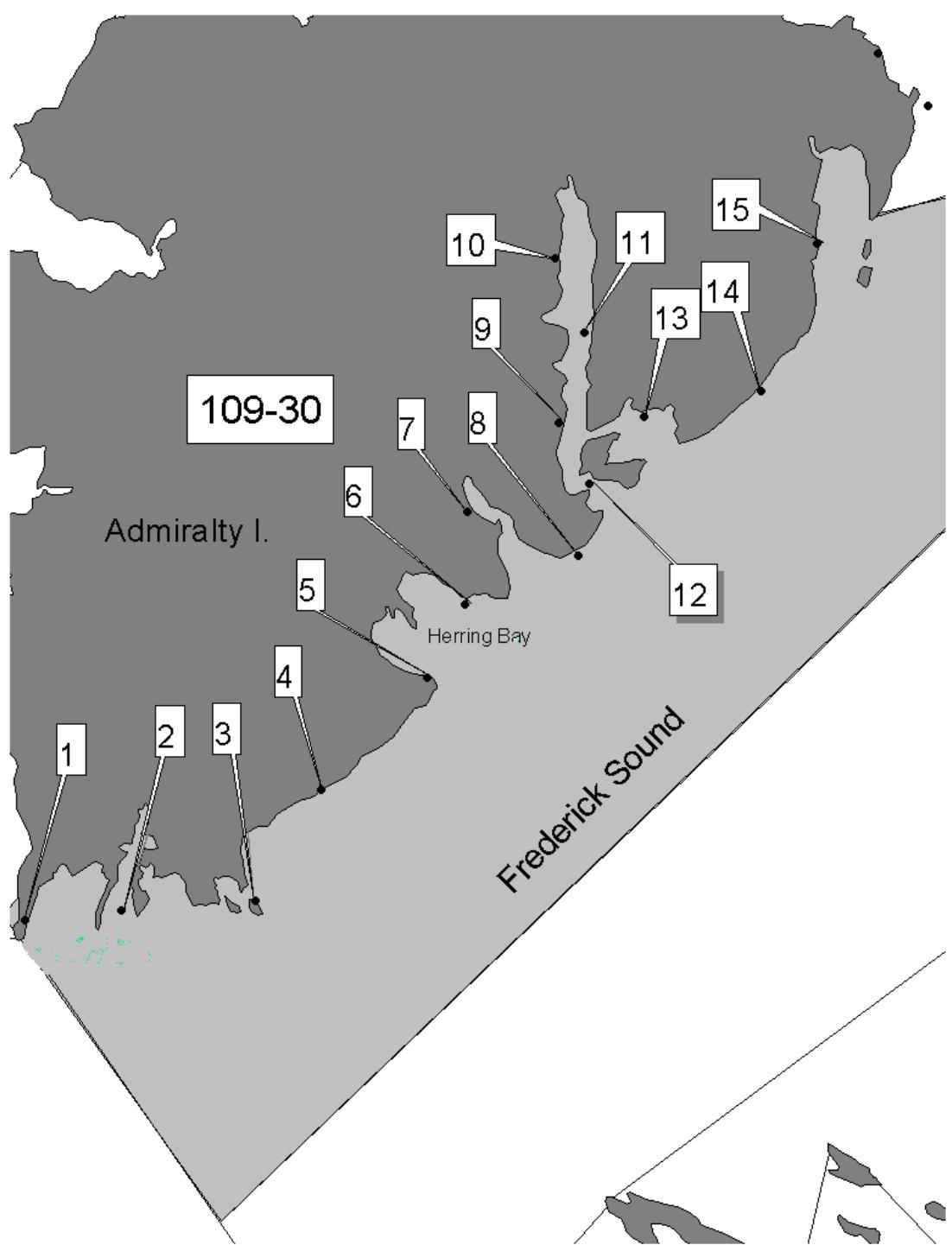


Figure 18. Subdistrict 109-30 sea cucumber survey area and transects surveyed in the 2000 season.

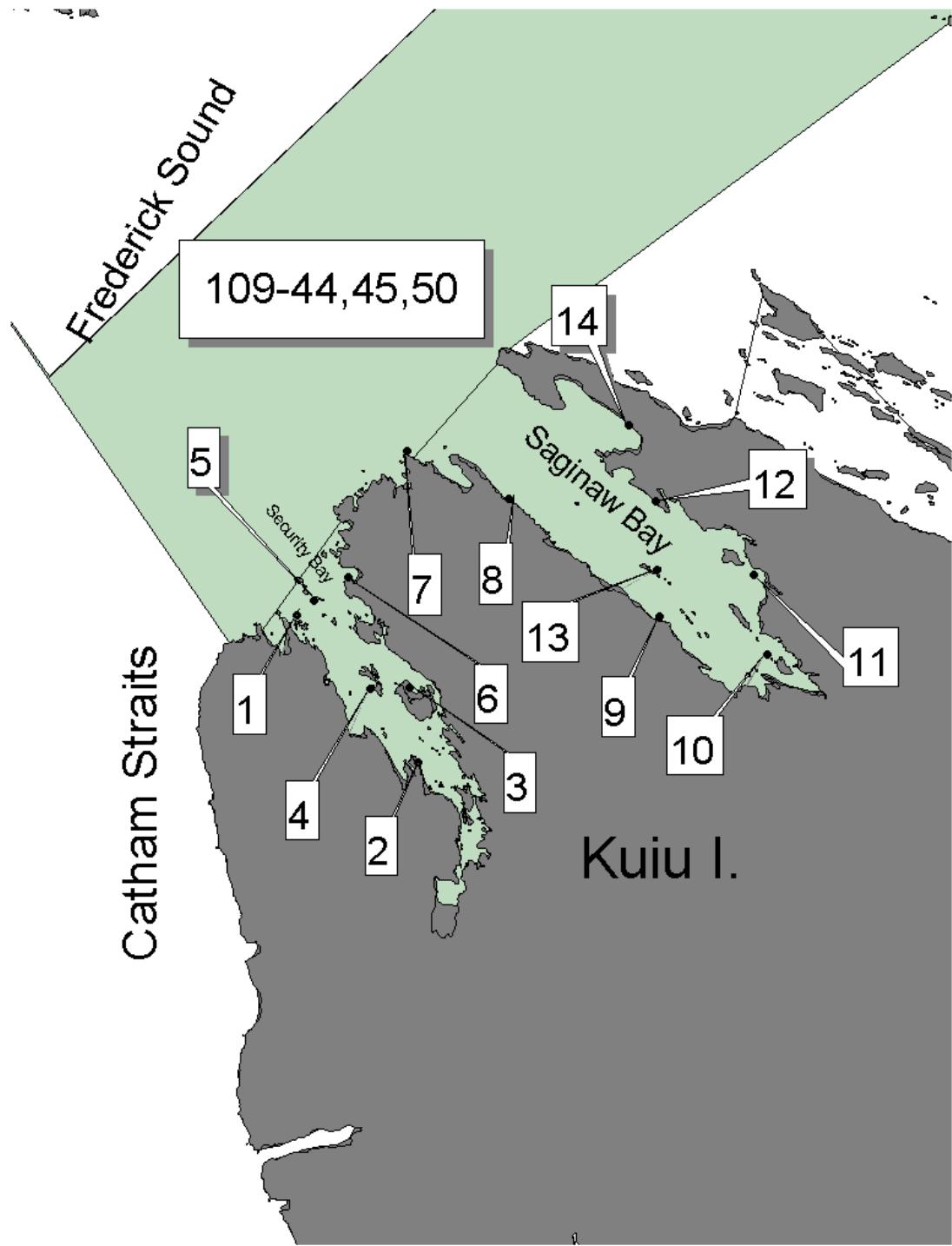


Figure 19. Subdistricts 109-44, 109-45, and 109-50 sea cucumber survey area and transects surveyed in the 1994 season.

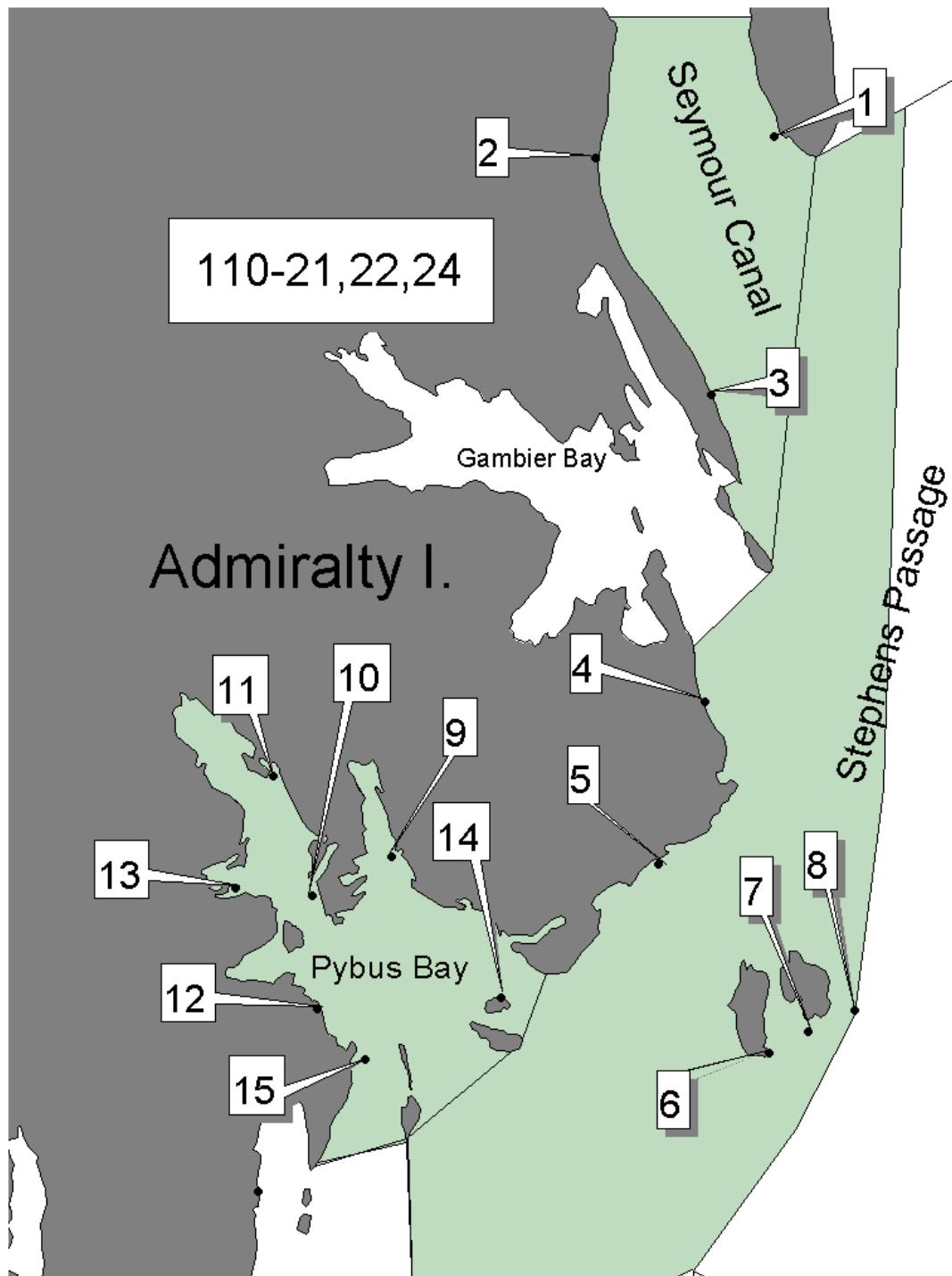


Figure 20. Subdistricts 110-21, 110-22, and 110-24 sea cucumber survey area and transects surveyed in the 1997 season.

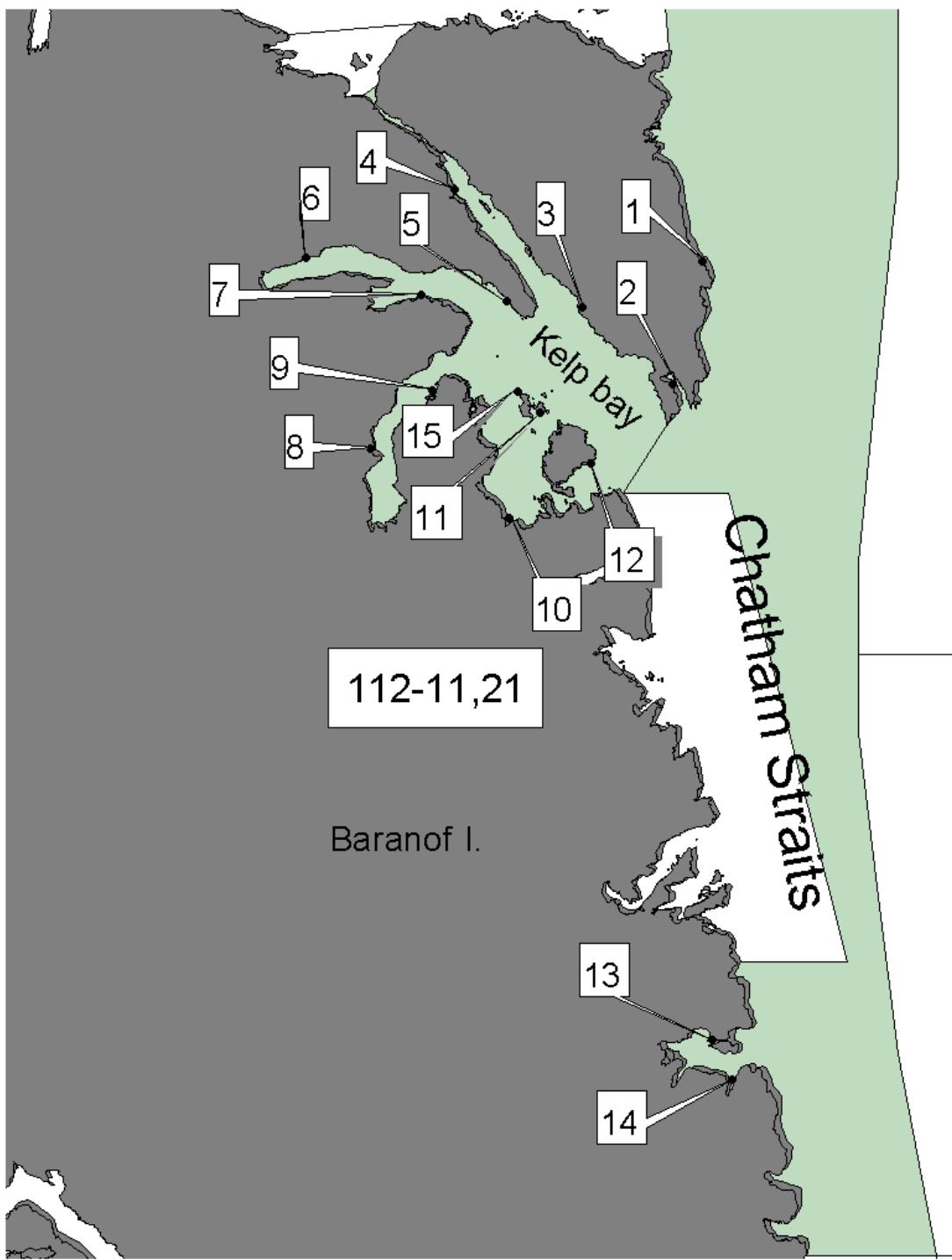


Figure 21. Subdistricts 112-11 and 112-21 sea cucumber survey area and transects surveyed in the 1991, 1994, 1997, and 2000 seasons.

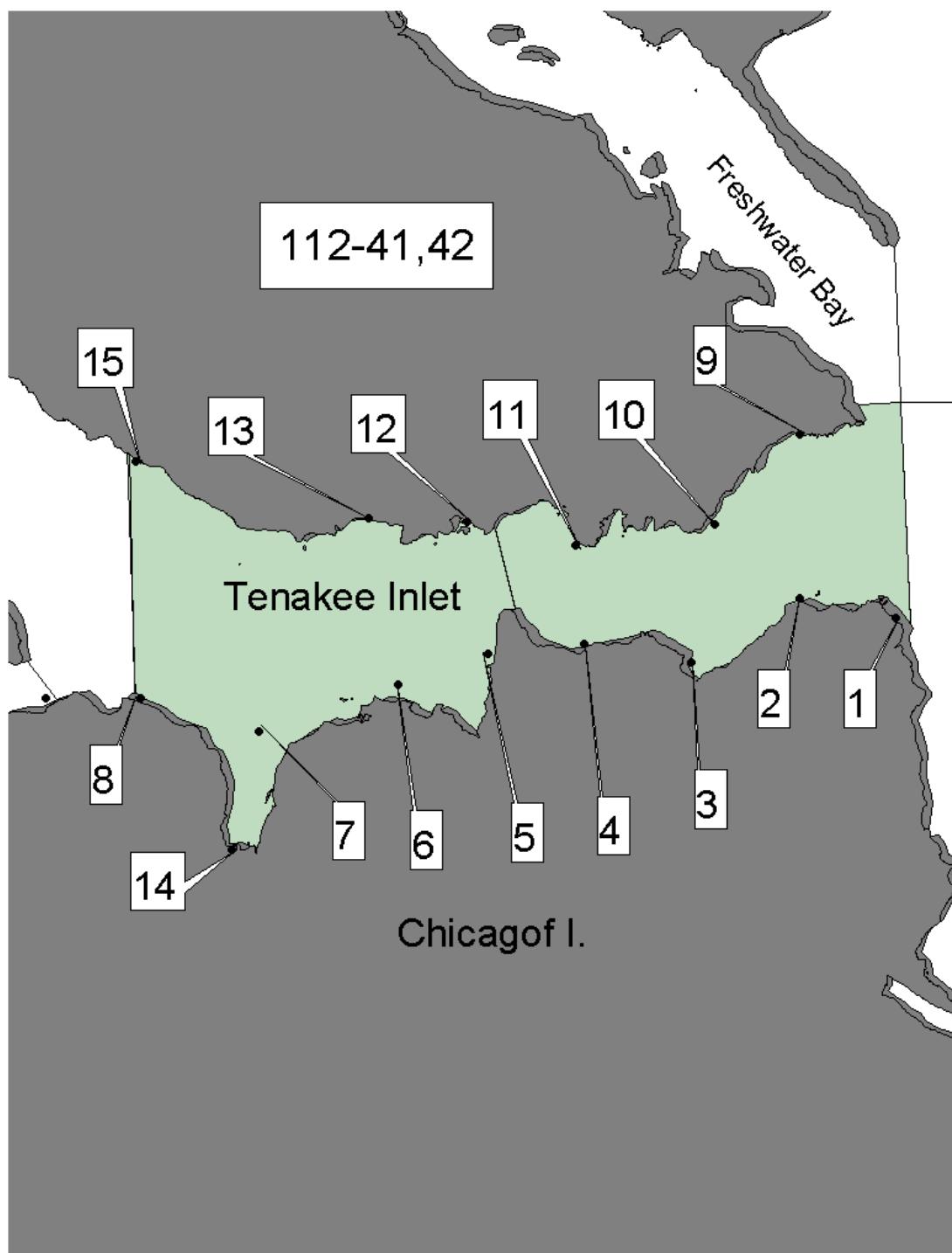


Figure 22. Subdistricts 112-41 and 112-42 sea cucumber survey area and transects surveyed in the 1997 and 2000 seasons.

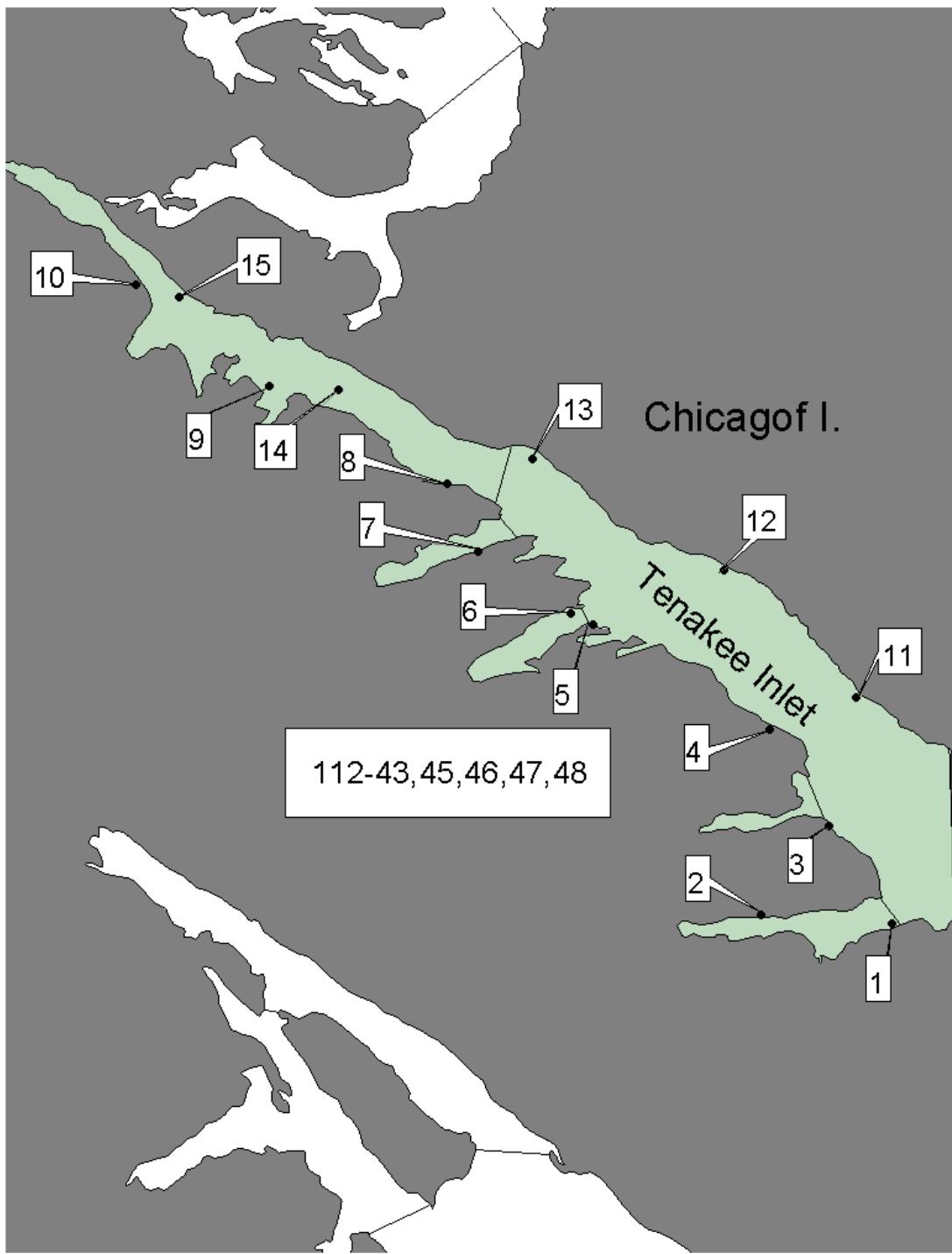


Figure 23. Subdistricts 112-43, 112-44, 112-45, 112-46, 112-47, and 112-48 sea cucumber survey area and transects surveyed in the 1997 and 2000 seasons.

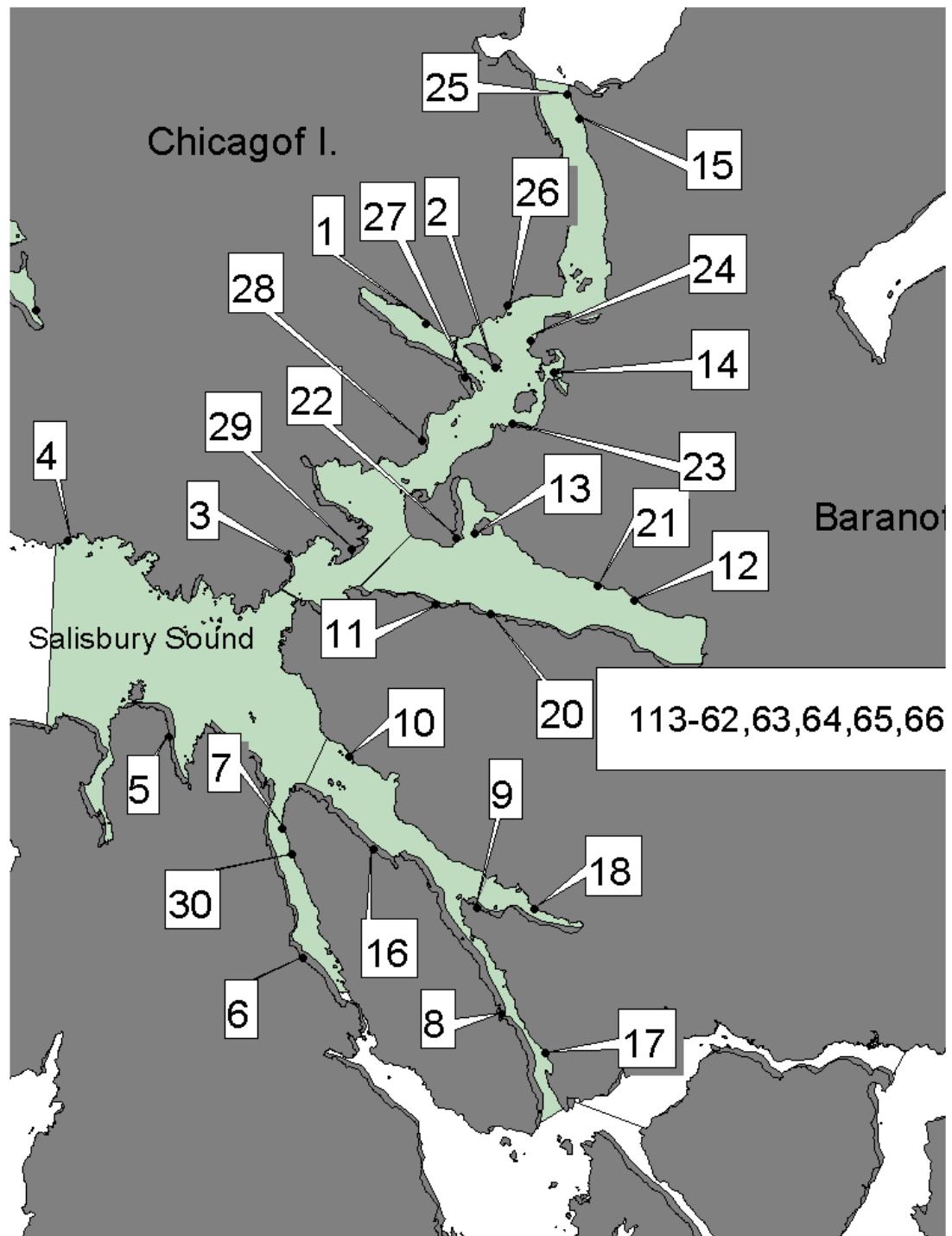


Figure 24. Subdistricts 113-62, 113-63, 113-64, 113-65, and 113-66 sea cucumber survey area and transects surveyed in the 1991, 1994, 1997, and 2000 seasons.

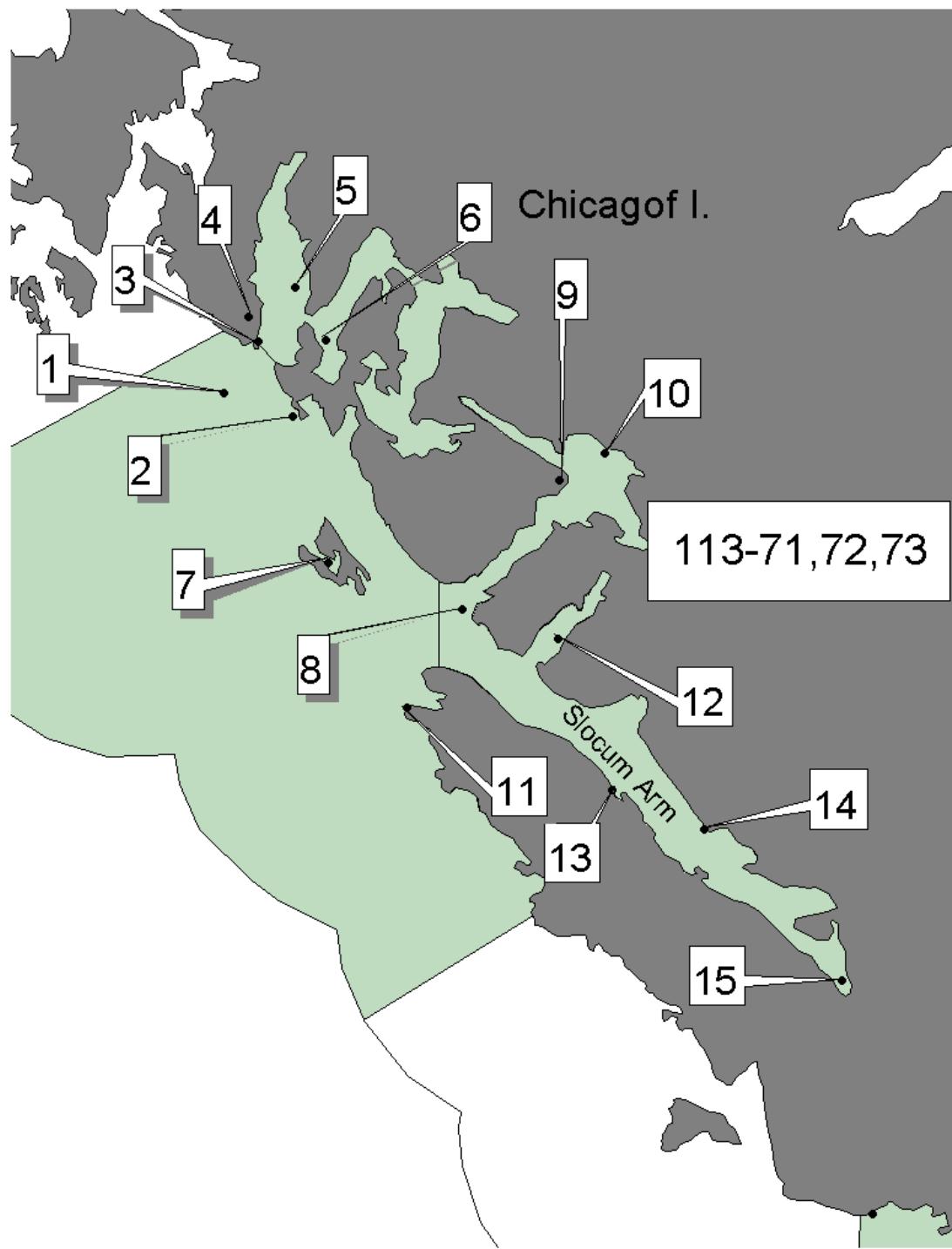


Figure 25. Subdistricts 113-71, 113-72, and 113-73 sea cucumber survey area and transects surveyed in the 1991 and 1994 seasons.

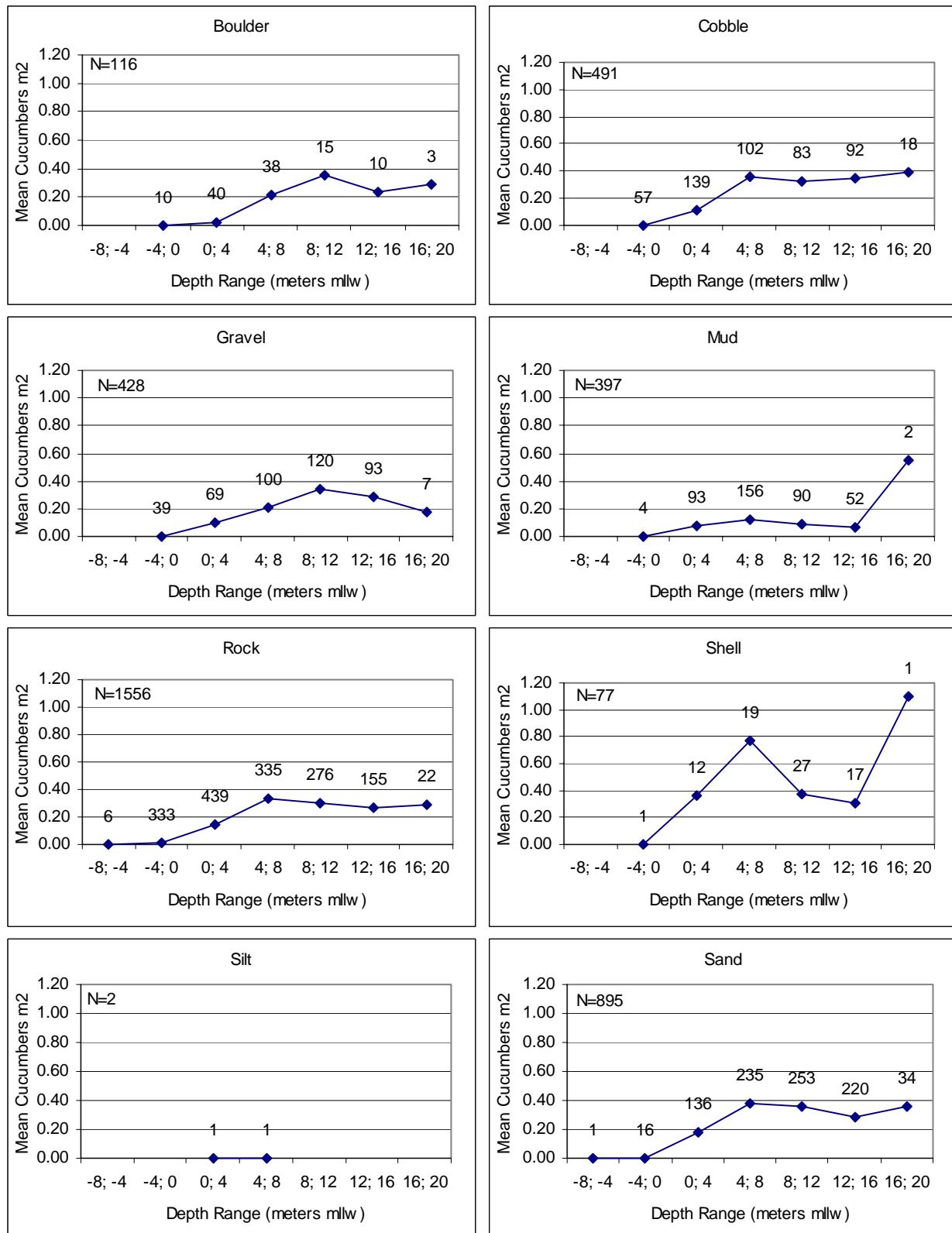


Figure 26. Mean cucumber densities by depth and habitat type. Data from 1991, 1994, and 2000.

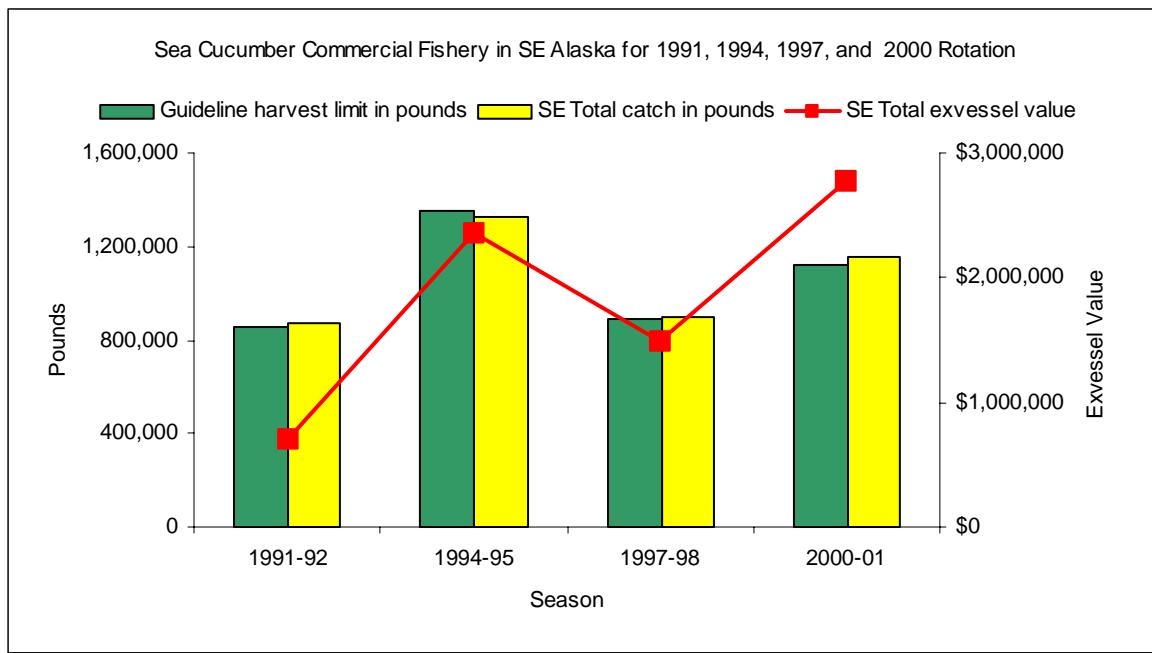


Figure 27. Sea Cucumber commercial fishery summary in Southeast Alaska, 1991, 1994, 1997, and 2000.

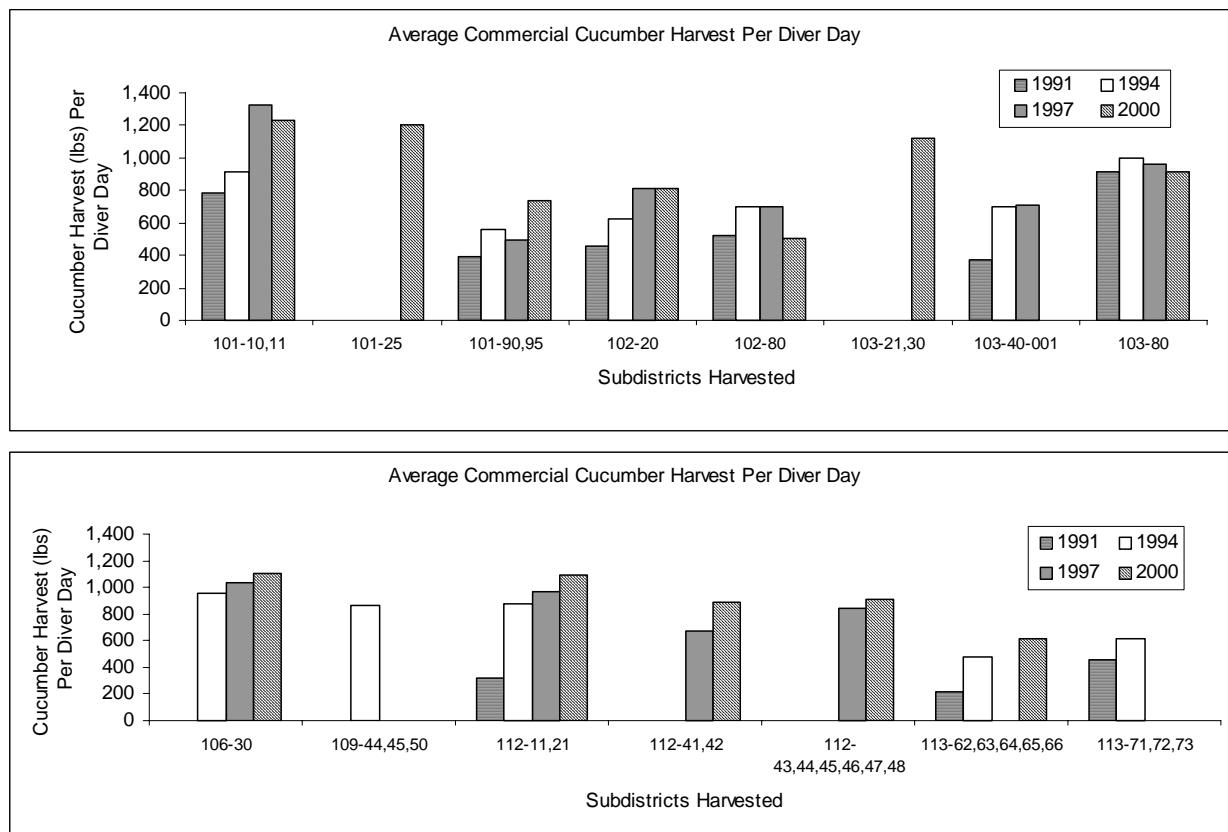


Figure 28. Sea cucumber commercial catch-per-unit-effort in Southeast Alaska for 1991, 1994, 1997, and 2000 fishing seasons.

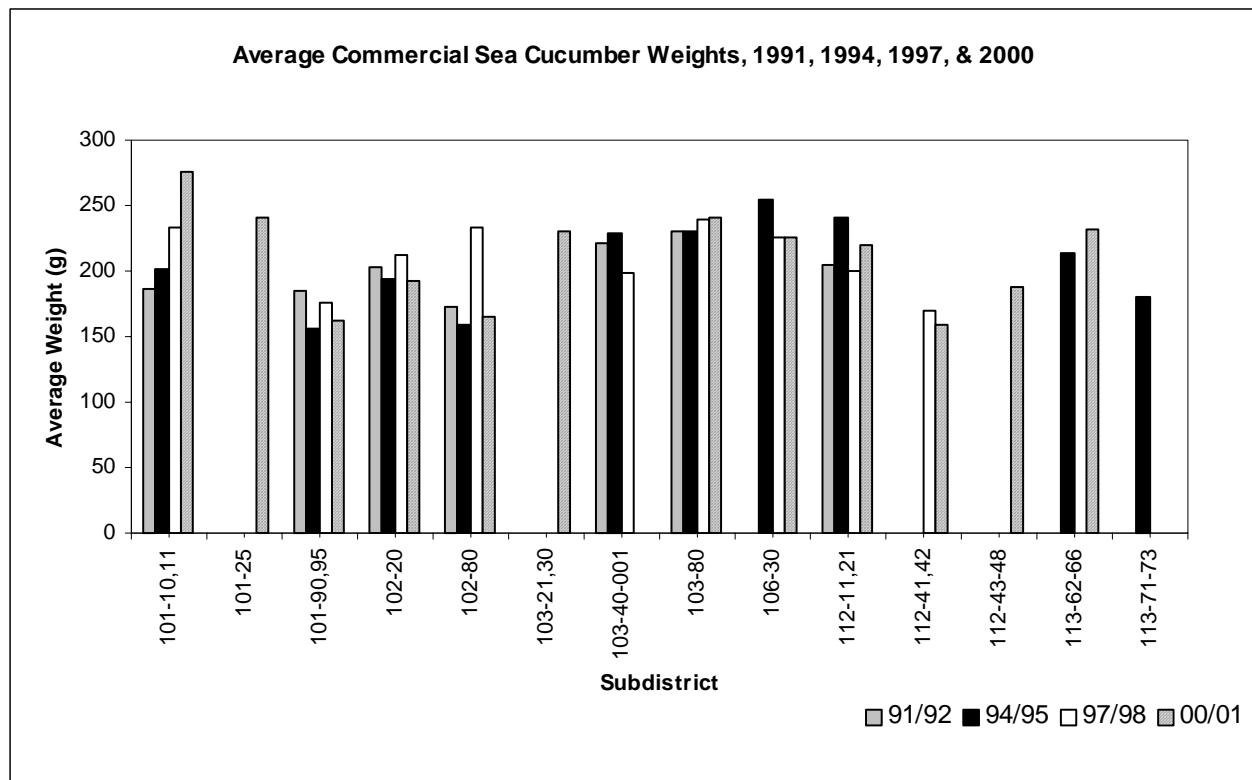


Figure 29. Average sea cucumber commercial weight by area and season for 1991, 1994, 1997, and 2000.

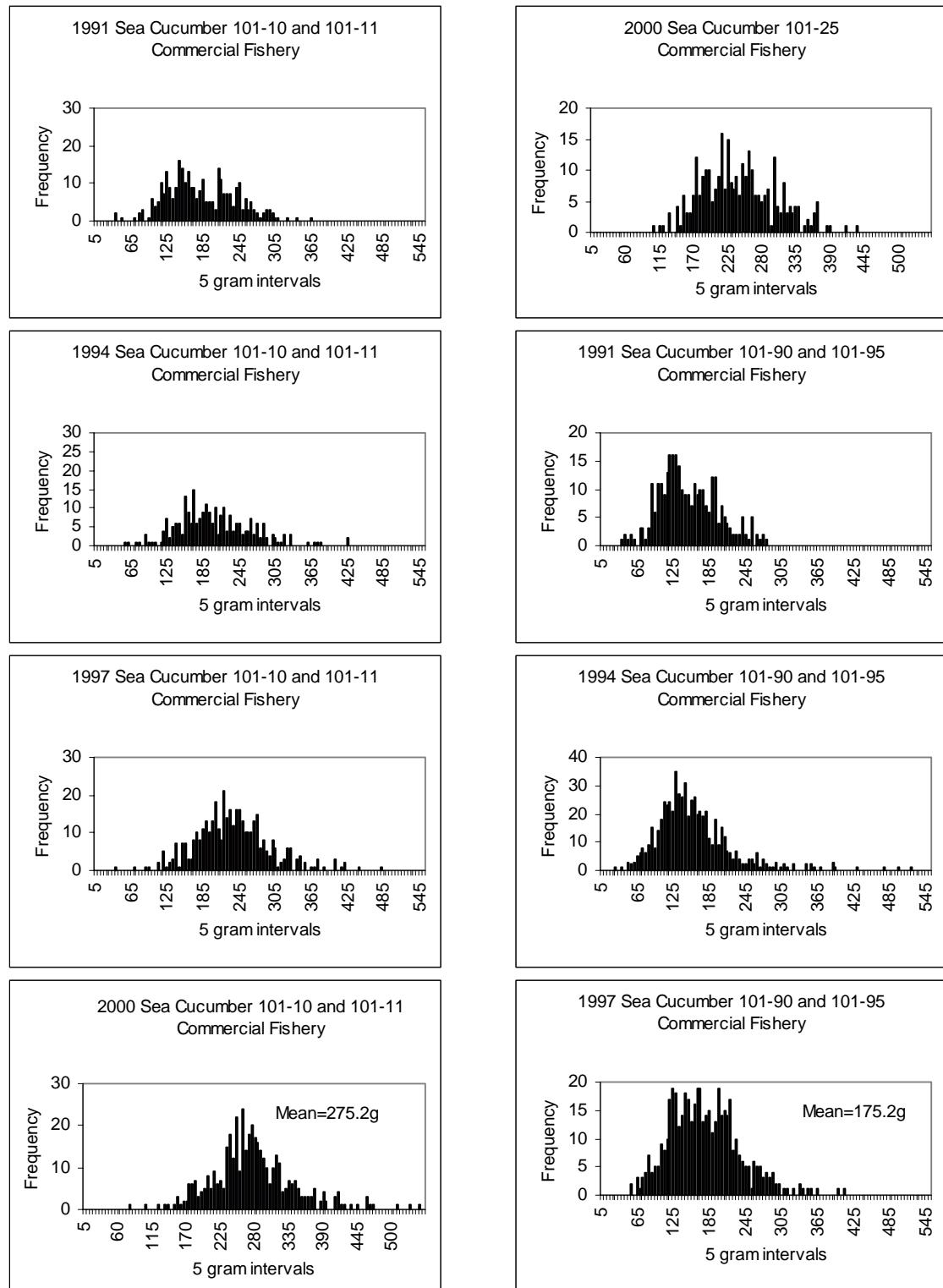


Figure 30. Individual sea cucumber weights by area from the 1991, 1994, 1997, and 2000 commercial fisheries.

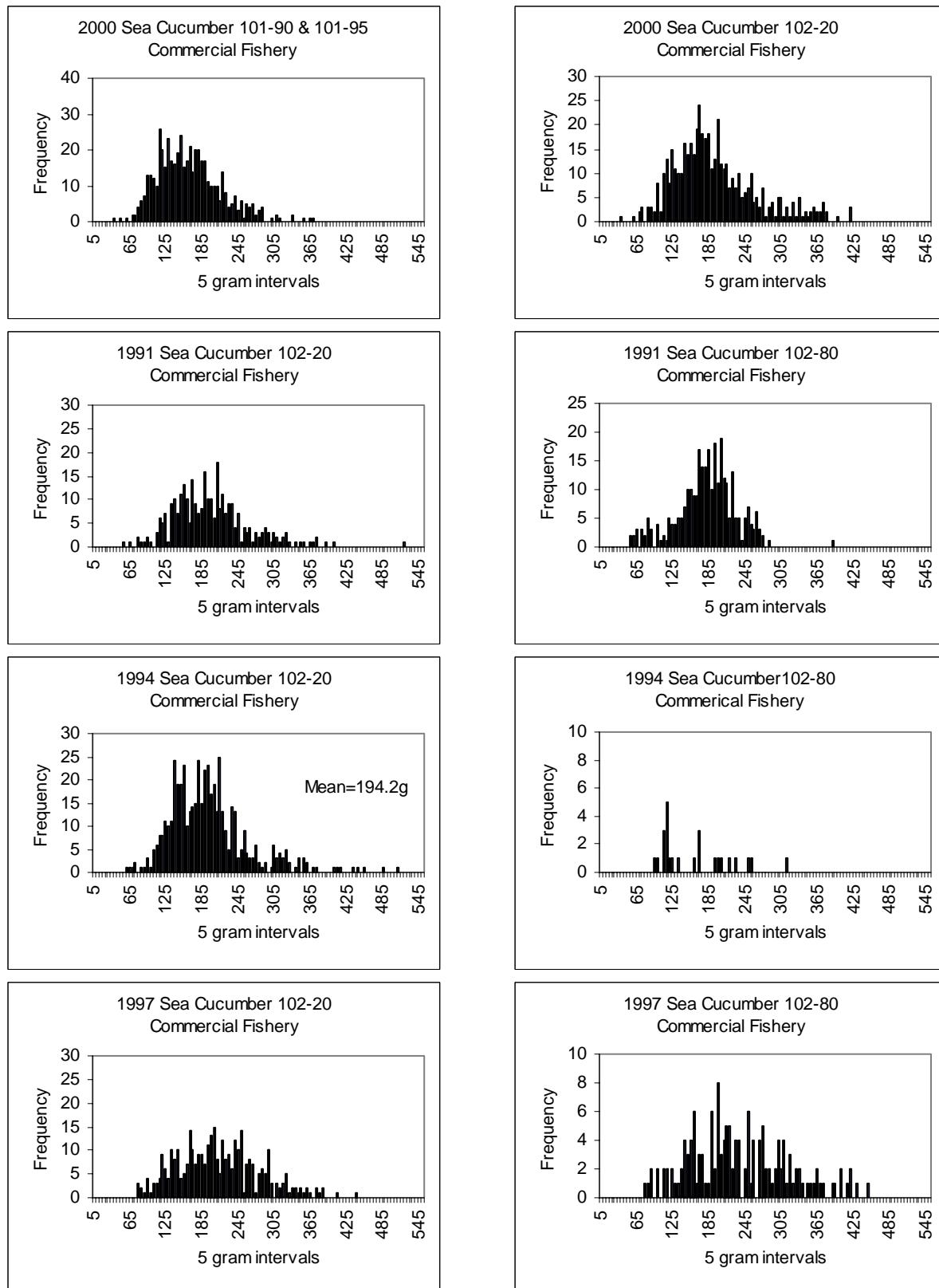


Figure 30. (page 2 of 5)

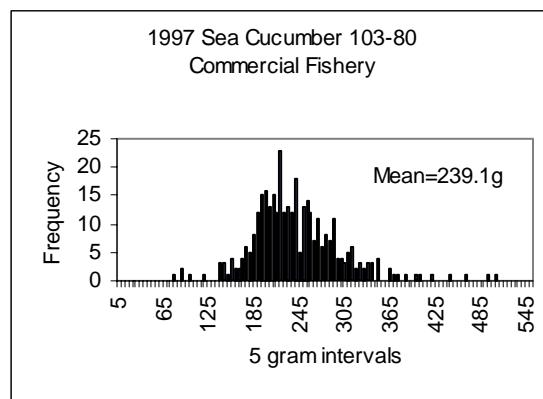
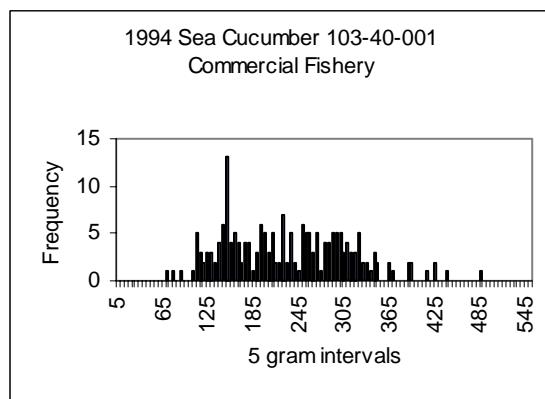
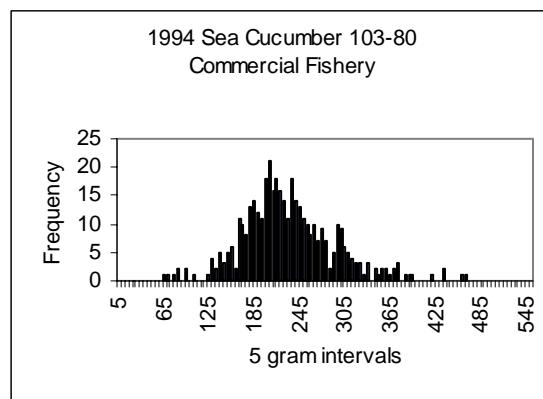
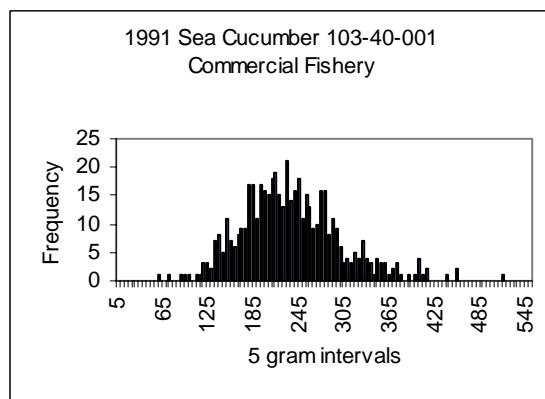
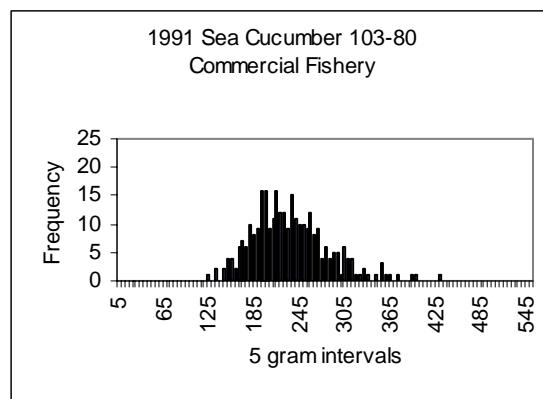
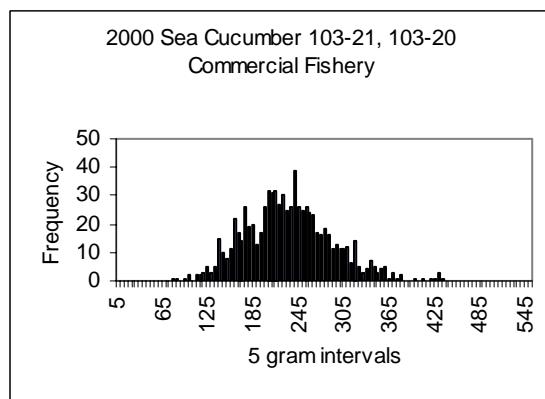
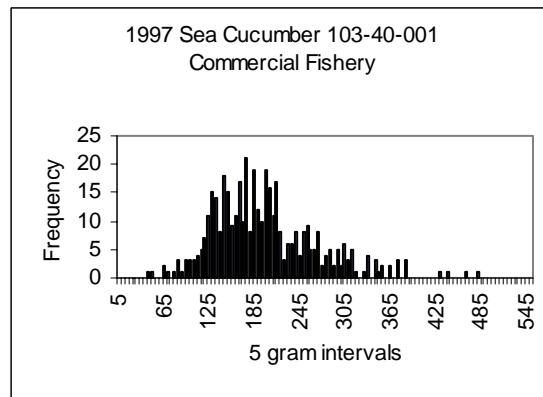
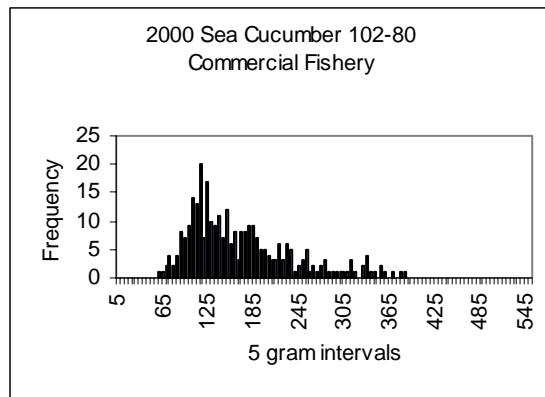


Figure 30. (page 3 of 5)

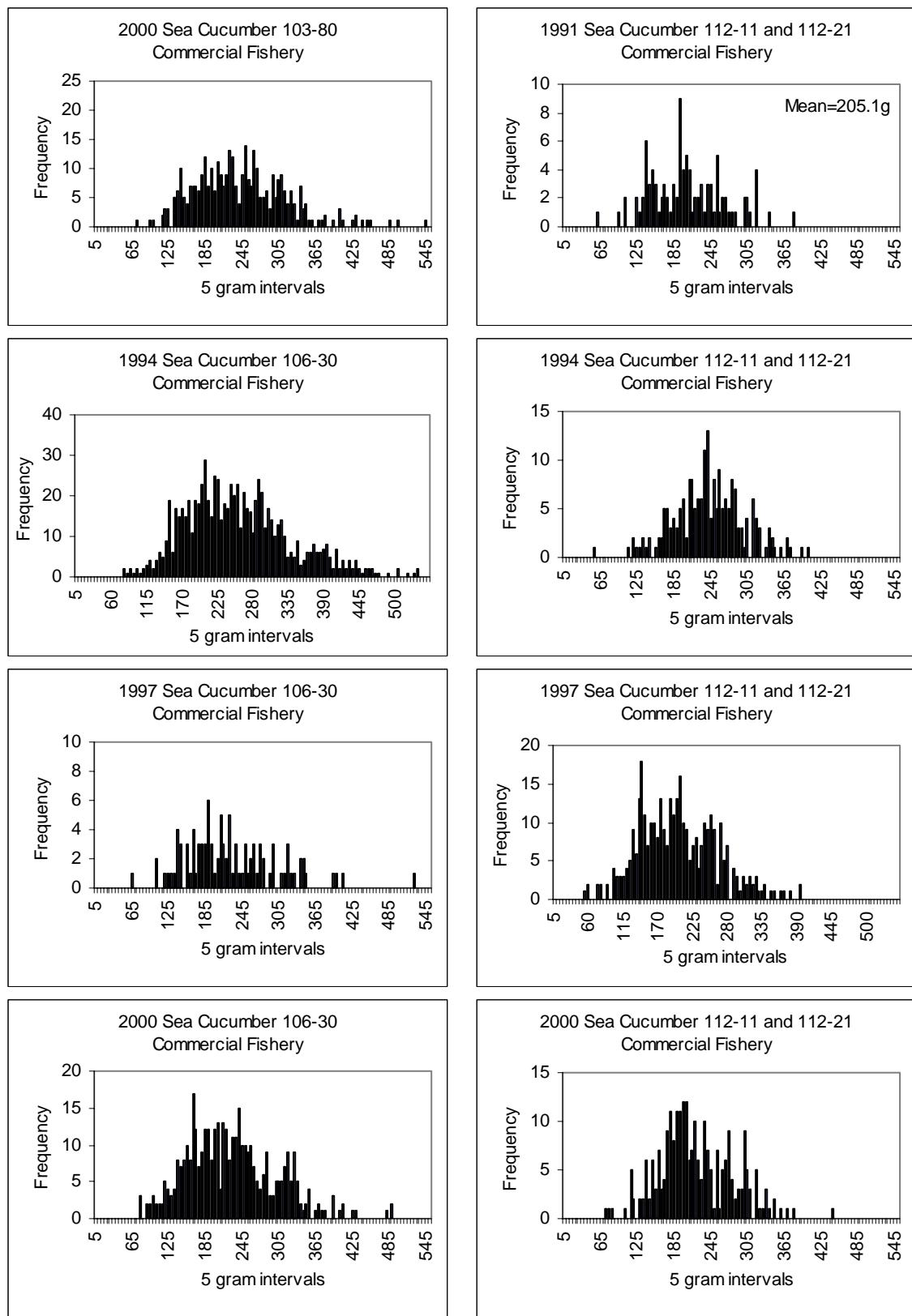


Figure 30. (page 4 of 5)

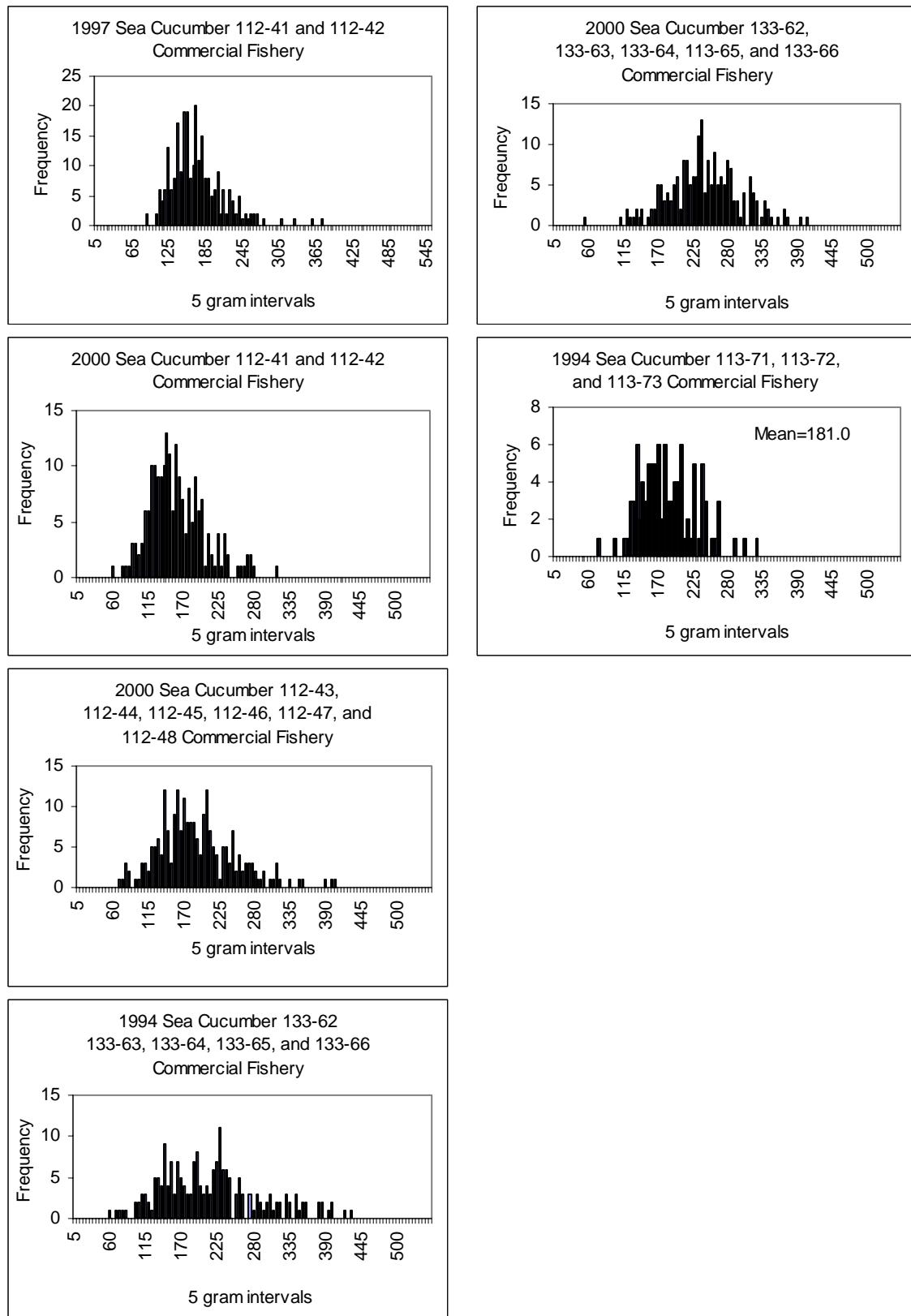


Figure 30. (page 5 of 5)

Appendix 1. Key to vegetative substrate types used for sea cucumber assessment surveys.

Code	Expanded Code	Species Included	Latin Names
AGM	Agarum	Sieve kelp	<i>Agarum clathratum</i>
ALA	Alaria	Ribbon kelps	<i>Alaria marginata, A. nana, A. fistulosa</i>
ELG	Eel grass	Eel grass, surfgrasses	<i>Zostera marina, Phyllospadix serrulatus, P. scouleri</i>
FIL	Filamentous red algae	Sea brush, poly, black tassel	<i>Polysiphonia pacifica, P. hendryi, Pterosiphonia bipinnata</i>
FIR	Fir kelp	Black pine, Oregon pine (red algae)	<i>Neorhodomela larix, N.oregona</i>
FUC	Fucus	Rockweed or popweed	<i>Fucus gardneri</i>
HIR	Hair kelp	Witch's hair, stringy acid kelp	<i>Desmarestia aculeata, D. viridis</i>
LAM	Laminaria	split kelp, sugar kelp, suction-cup kelp	<i>Laminaria bongardiana, L. saccharina, L. yezoensis (when isolated and identifiable)</i>
LBK	Large Brown Kelps	Five-ribbed kelp, three-ribbed kelp, split kelp, sugar kelp, sea spatula, sieve kelp, ribbon kelp	<i>Costaria costata, Cymathere triplicata, Laminaria spp., Pleurophycus gardneri, Agarum, Alaria spp.</i>
MAC	Macrocystis	macrocystis	<i>Macrocystis integrifolia</i>
NER	Nereocystis	Bull kelp	<i>Nereocystis leutkeana</i>
RED	Red algae	All red leafy algae (red ribbons, red blades, red sea cabbage, Turkish washcloth)	<i>Palmaria mollis, P. hecatensis, P. callophylloides, Dilsea californica, Neodilsea borealis, Mastocarpus papillatus, Turnerella mertensiana</i>
ULV	Ulva	Sea lettuce	<i>Ulva fenestrata, Ulvaria obscura</i>
COR	Coralline algae	Coral seaweeds (red algae)	<i>Bossiella, Corallina, Serraticardia</i>

Appendix 2. Key to bottom types used for sea cucumber assessment surveys.

Code	Expanded code	Definition
RCK	Bedrock	Various rocky substrates > 1 meter in diameter
BLD	Boulder	Substrate between 25 cm and 1 meter
CBL	Cobble	Substrate between 6 cm and 25 cm
GVL	Gravel	Substrate between 0.4 cm and 6 cm
SND	Sand	Clearly separate grains of < 0.4 cm
MUD	Mud	Soft, paste-like material
SIL	Silt	Fine organic dusting (very rarely used)
BAR	Barnacle	Area primarily covered with barnacles
SHL	Shell	Area primarily covered with whole or crushed shells
MUS	Mussels	Area primarily covered with mussels
WDY	Woody debris	Any submerged bark, logs, branches or root systems

Appendix 3. Sea cucumber assessment survey transect latitudes and longitudes, 1991, 1994, 1997, and 2000.

Subdistrict	Trans. No.	Latitude	Longitude	Subdistrict	Trans. No.	Latitude	Longitude
101-11	1	54.79282	-130.64317	101-30	1	55.10105	-130.90967
101-11	2	54.76787	-130.68343	101-30	2	55.14793	-130.82147
101-11	3	54.76375	-130.67308	101-30	3	55.13311	-130.80944
101-11	4	54.72423	-130.65282	101-30	4	55.12898	-130.73467
101-11	5	54.75144	-130.71064	101-30	5	55.19692	-130.63824
101-11	6	54.74247	-130.72708	101-30	6	55.27928	-130.55395
101-11	7	54.74096	-130.69933	101-30	7	55.30639	-130.50313
101-11	8	54.76982	-130.74828	101-30	8	55.22053	-130.57961
101-11	9	54.79848	-130.73540	101-30	9	55.14666	-130.69066
101-11	10	54.80222	-130.74158	101-30	10	55.13552	-130.60406
101-11	11	54.81580	-130.71071	101-30	11	55.11071	-130.68746
101-11	12	54.83165	-130.70548	101-30	12	55.03283	-130.68936
101-11	13	54.84975	-130.71431	101-30	13	55.07898	-130.76714
101-11	14	54.83110	-130.71533	101-30	14	55.08126	-130.80960
101-11	15	54.87491	-130.73514	101-30	15	55.08816	-130.90569
101-11	16	54.92035	-130.73848	101-90	1	55.49064	-131.76581
101-11	17	54.95662	-130.75360	101-90	2	55.55781	-131.69694
101-11	18	54.92525	-130.75725	101-90	3	55.48788	-131.82882
101-11	19	54.87710	-130.74913	101-90	4	55.52537	-131.82558
101-11	20	54.83567	-130.73625	101-90	5	55.52807	-131.75658
101-11	21	54.82064	-130.76880	101-90	6	55.56405	-131.71147
101-11	22	54.82180	-130.78852	101-90	7	55.58458	-131.68097
101-11	23	54.77982	-130.80366	101-90	8	55.57725	-131.64453
101-11	24	54.76205	-130.84685	101-90	9	55.59292	-131.62806
101-11	25	54.79023	-130.90629	101-90	10	55.62787	-131.71625
101-11	26	54.81888	-130.94575	101-90	11	55.69425	-131.67108
101-11	27	54.85141	-130.92980	101-90	13	55.71053	-131.66800
101-11	28	54.86465	-130.95195	101-90	14	55.74478	-131.72458
101-11	29	54.90451	-130.95679	101-90	15	55.77288	-131.60038
101-25	1	54.96353	-131.46848	101-90	16	55.79837	-131.52302
101-25	2	54.96700	-131.47137	101-90	17	55.78550	-131.61155
101-25	3	54.96078	-131.52165	101-90	18	55.80422	-131.70719
101-25	4	54.98100	-131.50167	101-90	19	55.57044	-131.69444
101-25	5	55.00050	-131.52283	101-90	20	55.51185	-131.83613
101-25	6	54.99333	-131.53433	101-90	21	55.54118	-131.79727
101-25	7	54.97460	-131.51993	101-90	22	55.67434	-131.70935
101-25	8	55.00400	-131.56267	101-90	23	55.71159	-131.63609
101-25	9	54.93816	-131.49358	101-90	24	55.76934	-131.66368
101-25	10	54.95580	-131.48123	101-90	25	55.79127	-131.55476
101-25	11	54.92940	-131.57540	101-90	26	55.79681	-131.66650
101-25	12	54.93632	-131.58738	102-20	1	55.12770	-132.05170
101-25	13	54.94175	-131.58705	102-20	2	55.11910	-132.07137
101-25	14	54.95693	-131.58240	102-20	3	55.11002	-131.99235
101-25	15	54.95436	-131.58920	102-20	4	55.05350	-132.00458
101-25	16	54.94413	-131.60548	102-20	5	55.03737	-132.00067
101-25	17	54.94713	-131.61300	102-20	6	55.03337	-132.01202
101-25	18	54.93533	-131.59578	102-20	7	55.03374	-132.04176
101-25	19	54.96113	-131.54913	102-20	8	55.01770	-131.97667
101-25	20	54.95391	-131.55367	102-20	9	55.00623	-131.99045
101-25	21	54.94968	-131.57672	102-20	10	54.98708	-132.02913
101-25	22	54.96625	-131.57412	102-20	11	54.96747	-132.03213
101-25	23	54.96710	-131.59000	102-20	12	54.95022	-132.06788
101-25	24	54.97587	-131.58428	102-20	13	54.96897	-132.01697
101-25	25	55.11308	-131.70810	102-20	14	54.95586	-131.96607
101-25	26	55.11015	-131.73830	102-20	15	54.93665	-131.98058
				102-20	16	54.94482	-132.00298
				102-20	17	54.92432	-131.98885
				102-20	30	54.93065	-131.98227

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Subdistrict	Trans. No.	Latitude	Longitude	Subdistrict	Trans. No.	Latitude	Longitude
102-80	1	55.50733	-132.00067	106-30	1	56.24937	-132.89498
102-80	2	55.53199	-132.04113	106-30	2	56.25667	-132.72402
102-80	3	55.54000	-132.06633	106-30	3	56.21462	-132.71615
102-80	4	55.54908	-132.11025	106-30	4	56.16272	-132.72605
102-80	5	55.56033	-132.14950	106-30	5	56.07258	-132.67278
102-80	6	55.58252	-132.17068	106-30	6	56.30235	-133.14873
102-80	7	55.59883	-132.19683	106-30	7	56.22837	-133.07270
102-80	8	55.62275	-132.20168	106-30	8	56.24732	-132.99428
102-80	9	55.64418	-132.20547	106-30	9	56.20327	-132.94592
102-80	10	55.66793	-132.21793	106-30	10	56.20182	-132.91465
102-80	11	55.69300	-132.22883	106-30	11	56.18127	-133.00975
102-80	12	55.71493	-132.24307	106-30	12	56.16670	-132.92820
102-80	13	55.73462	-132.26057	106-30	13	56.12215	-132.93552
102-80	14	55.75783	-132.28295	106-30	14	56.11323	-132.85810
103-21,30	1	54.72890	-132.68378	106-30	15	56.12480	-132.88777
103-21,30	2	54.82725	-132.72848	106-30	16	56.11314	-132.71222
103-21,30	3	54.88972	-132.81022	106-30	17	56.23622	-133.02668
103-21,30	4	54.91500	-132.79635	109-30	1	57.02315	-134.60801
103-21,30	5	54.93382	-132.75390	109-30	2	57.02616	-134.55197
103-21,30	6	54.97338	-132.95213	109-30	3	57.02957	-134.47382
103-21,30	7	54.96683	-132.83653	109-30	4	57.06455	-134.43581
103-21,30	8	54.94845	-132.97732	109-30	5	57.09960	-134.37416
103-21,30	9	54.93168	-132.92397	109-30	6	57.12297	-134.35280
103-21,30	10	54.89628	-132.87265	109-30	7	57.15171	-134.35162
103-21,30	11	54.84303	-132.83327	109-30	8	57.13787	-134.28758
103-21,30	12	54.80570	-132.77877	109-30	9	57.17970	-134.29853
103-21,30	13	54.76627	-132.73885	109-30	10	57.23134	-134.30049
103-21,30	14	54.73985	-132.75468	109-30	11	57.20803	-134.28410
103-21,30	15	54.69248	-132.71458	109-30	12	57.16058	-134.28069
103-21,30	16	54.89751	-132.65438	109-30	13	57.18153	-134.24932
103-21,30	17	54.92365	-132.70656	109-30	14	57.18965	-134.18151
103-21,30	18	54.98406	-132.74021	109-30	15	57.23587	-134.14851
103-21,30	19	54.96180	-132.60694	109-44,45,50	1	56.86395	-134.37176
103-21,30	20	54.93423	-132.52260	109-44,45,50	2	56.82389	-134.31172
103-21,30	21	54.95075	-132.48721	109-44,45,50	3	56.84431	-134.31582
103-21,30	22	54.98766	-132.47894	109-44,45,50	4	56.84395	-134.33549
103-21,30	23	54.93839	-132.48449	109-44,45,50	5	56.86778	-134.36291
103-21,30	24	54.92232	-132.52705	109-44,45,50	6	56.87388	-134.34630
103-80	1	55.63607	-133.39907	109-44,45,50	7	56.90772	-134.31730
103-80	2	55.65802	-133.44390	109-44,45,50	8	56.89492	-134.26750
103-80	3	55.67248	-133.39327	109-44,45,50	9	56.86356	-134.19255
103-80	4	55.68152	-133.37967	109-44,45,50	10	56.85330	-134.13942
103-80	5	55.68570	-133.36307	109-44,45,50	11	56.87442	-134.14578
103-80	6	55.70837	-133.42062	109-44,45,50	12	56.89417	-134.19458
103-80	7	55.72227	-133.41010	109-44,45,50	13	56.87573	-134.19416
103-80	9	55.74143	-133.35383	109-44,45,50	14	56.91471	-134.20814
103-80	10	55.74688	-133.34312	110-21,22,24	1	57.57752	-133.83850
103-80	11	55.75272	-133.38413	110-21,22,24	2	57.57077	-133.94643
103-80	12	55.74990	-133.45083	110-21,22,24	3	57.49417	-133.87698
103-80	13	55.77598	-133.53350	110-21,22,24	4	57.39525	-133.88063
103-80	14	55.73370	-133.49710	110-21,22,24	5	57.34242	-133.90858
103-80	15	55.69698	-133.52410	110-21,22,24	6	57.28110	-133.84172
103-80	17	55.67662	-133.55613	110-21,22,24	7	57.28815	-133.81855
103-80	18	55.65038	-133.54882	110-21,22,24	8	57.29520	-133.79068
103-80	16	55.72003	-133.62334	110-21,22,24	9	57.34508	-134.06878
103-80	8	55.71949	-133.33036	110-21,22,24	10	57.33235	-134.11593
				110-21,22,24	11	57.37112	-134.13953
				110-21,22,24	12	57.29555	-134.11358
				110-21,22,24	13	57.33473	-134.16222
				110-21,22,24	14	57.29918	-134.00307
				110-21,22,24	15	57.27917	-134.08452

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Appendix 3. (page 3 of 3)

Subdistrict	Trans. No.	Latitude	Longitude	Subdistrict	Trans. No.	Latitude	Longitude
112-11,21	1	57.34620	-134.80890	113-62,63,64,65,66	1	57.44540	-135.61998
112-11,21	2	57.30570	-134.82753	113-62,63,64,65,66	2	57.43343	-135.58610
112-11,21	3	57.33118	-134.88217	113-62,63,64,65,66	3	57.38216	-135.68875
112-11,21	4	57.36983	-134.96008	113-62,63,64,65,66	4	57.38712	-135.79856
112-11,21	5	57.33312	-134.92847	113-62,63,64,65,66	5	57.33470	-135.74843
112-11,21	6	57.34753	-135.05082	113-62,63,64,65,66	6	57.27547	-135.68150
112-11,21	7	57.33508	-134.98018	113-62,63,64,65,66	7	57.31015	-135.69199
112-11,21	8	57.28442	-135.01110	113-62,63,64,65,66	8	57.26035	-135.58343
112-11,21	9	57.30388	-134.97308	113-62,63,64,65,66	9	57.28896	-135.59545
112-11,21	10	57.26133	-134.92693	113-62,63,64,65,66	10	57.32972	-135.65851
112-11,21	11	57.29642	-134.90837	113-62,63,64,65,66	11	57.37035	-135.61520
112-11,21	12	57.27942	-134.87735	113-62,63,64,65,66	12	57.37130	-135.51714
112-11,21	13	57.08880	-134.80313	113-62,63,64,65,66	13	57.38910	-135.59680
112-11,21	14	57.07568	-134.79088	113-62,63,64,65,66	14	57.43212	-135.55720
112-11,21	15	57.30312	-134.92185	113-62,63,64,65,66	15	57.50001	-135.54426
112-41,42	1	57.75827	-134.93192	113-62,63,64,65,66	16	57.30472	-135.64653
112-41,42	2	57.76305	-134.97562	113-62,63,64,65,66	17	57.24991	-135.56147
112-41,42	3	57.74758	-135.02431	113-62,63,64,65,66	18	57.28850	-135.56670
112-41,42	4	57.75215	-135.07268	113-62,63,64,65,66	20	57.36778	-135.58877
112-41,42	5	57.74961	-135.11623	113-62,63,64,65,66	21	57.37534	-135.53505
112-41,42	6	57.74223	-135.15603	113-62,63,64,65,66	22	57.38790	-135.60585
112-41,42	7	57.73102	-135.21863	113-62,63,64,65,66	23	57.41842	-135.57796
112-41,42	8	57.73900	-135.27245	113-62,63,64,65,66	24	57.44086	-135.56846
112-41,42	9	57.80203	-134.97526	113-62,63,64,65,66	25	57.50666	-135.55034
112-41,42	10	57.78062	-135.01385	113-62,63,64,65,66	26	57.45022	-135.57996
112-41,42	11	57.77558	-135.07670	113-62,63,64,65,66	27	57.43092	-135.60120
112-41,42	12	57.78120	-135.12557	113-62,63,64,65,66	28	57.41392	-135.62191
112-41,42	13	57.78194	-135.16910	113-62,63,64,65,66	29	57.38488	-135.65727
112-41,42	14	57.70250	-135.23088	113-62,63,64,65,66	30	57.30333	-135.68703
112-41,42	15	57.79567	-135.27435	113-71,72,73	1	57.60427	-136.11846
112-43-52	1	57.73887	-135.31520	113-71,72,73	2	57.59819	-136.08427
112-43-52	2	57.74210	-135.40095	113-71,72,73	3	57.61786	-136.10121
112-43-52	3	57.77312	-135.35673	113-71,72,73	4	57.62436	-136.10636
112-43-52	4	57.80645	-135.39490	113-71,72,73	5	57.63220	-136.08301
112-43-52	5	57.84303	-135.51113	113-71,72,73	6	57.61824	-136.06788
112-43-52	6	57.84707	-135.52562	113-71,72,73	7	57.55954	-136.06649
112-43-52	7	57.86823	-135.58598	113-71,72,73	8	57.54739	-136.00147
112-43-52	8	57.89162	-135.60582	113-71,72,73	9	57.58138	-135.95365
112-43-52	9	57.92560	-135.72207	113-71,72,73	10	57.58840	-135.93107
112-43-52	10	57.96073	-135.80887	113-71,72,73	11	57.52127	-136.02772
112-43-52	11	57.81770	-135.33833	113-71,72,73	12	57.53960	-135.95404
112-43-52	12	57.86147	-135.42552	113-71,72,73	13	57.49957	-135.92727
112-43-52	13	57.90028	-135.55088	113-71,72,73	14	57.48916	-135.88164
112-43-52	14	57.92455	-135.67682	113-71,72,73	15	57.44901	-135.81401
112-43-52	15	57.95647	-135.78082				

Appendix 4. Sea cucumber assessment survey transect details, 1991.

Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m	Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m
101-11	3/23/1991	1	a	124	62	101-11	3/25/1991	26	a	0	0
101-11	3/23/1991	1	b	129	64.5	101-11	3/25/1991	26	b	0	0
101-11	3/23/1991	2	a	75	37.5	101-11	3/25/1991	28	a	0	0
101-11	3/23/1991	2	b	82	41	101-11	3/25/1991	28	b	0	0
101-11	3/23/1991	3	a	24	12	101-11	3/25/1991	29	a	0	0
101-11	3/23/1991	3	b	46	23	101-90	6/19/1991	1	a	22	11
101-11	3/22/1991	4	a	12	6	101-90	6/19/1991	1	b	23	11.5
101-11	3/22/1991	4	b	8	4	101-90	6/19/1991	2	a	69	34.5
101-11	3/23/1991	5	a	72	36	101-90	6/19/1991	2	b	91	45.5
101-11	3/23/1991	5	b	59	29.5	101-90	6/20/1991	3	a	35	17.5
101-11	3/22/1991	6	a	8	4	101-90	6/20/1991	3	b	60	30
101-11	3/23/1991	7	a	127	63.5	101-90	6/20/1991	4	a	22	11
101-11	3/23/1991	7	b	145	72.5	101-90	6/20/1991	4	b	21	10.5
101-11	3/22/1991	8	a	3	1.5	101-90	6/19/1991	5	a	20	10
101-11	3/22/1991	8	b	3	1.5	101-90	6/19/1991	5	b	21	10.5
101-11	3/23/1991	9	a	0	0	101-90	6/19/1991	6	a	37	18.5
101-11	3/23/1991	9	b	1	0.5	101-90	6/19/1991	6	b	65	32.5
101-11	3/23/1991	10	a	21	10.5	101-90	6/19/1991	7	a	30	15
101-11	3/23/1991	10	b	11	5.5	101-90	6/19/1991	7	b	20	10
101-11	3/23/1991	11	a	40	20	101-90	6/19/1991	8	a	8	4
101-11	3/23/1991	11	b	9	4.5	101-90	6/19/1991	8	b	12	6
101-11	3/23/1991	12	a	27	13.5	101-90	6/19/1991	9	a	20	10
101-11	3/23/1991	12	b	16	8	101-90	6/19/1991	9	b	24	12
101-11	3/23/1991	13	a	12	6	101-90	6/19/1991	10	a	42	21
101-11	3/23/1991	13	b	30	15	101-90	6/19/1991	10	b	34	17
101-11	3/24/1991	14	a	43	21.5	101-90	6/19/1991	11	a	24	12
101-11	3/24/1991	14	b	48	24	101-90	6/19/1991	11	b	55	27.5
101-11	3/24/1991	15	a	48	24	101-90	6/19/1991	13	a	65	32.5
101-11	3/24/1991	15	b	57	28.5	101-90	6/19/1991	13	b	8	4
101-11	3/24/1991	16	a	18	9	101-90	6/19/1991	14	a	48	24
101-11	3/24/1991	16	b	24	12	101-90	6/19/1991	14	b	32	16
101-11	3/24/1991	17	a	0	0	101-90	6/18/1991	15	a	23	11.5
101-11	3/24/1991	17	b	0	0	101-90	6/18/1991	15	b	14	7
101-11	3/24/1991	18	a	68	34	101-90	6/18/1991	16	a	40	20
101-11	3/24/1991	18	b	104	52	101-90	6/18/1991	16	b	26	13
101-11	3/24/1991	19	a	51	25.5	101-90	6/18/1991	17	a	19	9.5
101-11	3/24/1991	19	b	35	17.5	101-90	6/18/1991	17	b	17	8.5
101-11	3/24/1991	20	a	45	22.5	101-90	6/18/1991	18	a	19	9.5
101-11	3/24/1991	20	b	54	27	101-90	6/18/1991	18	b	31	15.5
101-11	3/24/1991	21	a	15	7.5	102-20	6/23/1991	1	a	55	27.5
101-11	3/24/1991	21	b	10	5	102-20	6/23/1991	1	b	94	47
101-11	3/24/1991	22	a	11	5.5	102-20	6/23/1991	2	a	33	16.5
101-11	3/24/1991	22	b	25	12.5	102-20	6/23/1991	2	b	19	9.5
101-11	3/22/1991	23	a	2	1	102-20	6/23/1991	3	a	5	2.5
101-11	3/22/1991	23	b	0	0	102-20	6/23/1991	3	b	5	2.5
101-11	3/25/1991	24	a	1	0.5	102-20	6/23/1991	4	a	17	8.5
101-11	3/25/1991	24	b	12	6	102-20	6/23/1991	4	b	7	3.5
101-11	3/25/1991	25	a	0	0	102-20	6/24/1991	5	a	111	55.5
101-11	3/25/1991	25	b	0	0	102-20	6/24/1991	5	b	40	20

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Appendix 4. (page 2 of 5)

Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m	Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m
102-20	6/23/1991	6	a	27	13.5	102-80	6/21/1991	14	b	13	6.5
102-20	6/23/1991	6	b	8	4	103-40-001	2/16/1991	20	a	12	6
102-20	6/23/1991	7	a	93	46.5	103-40-001	2/16/1991	20	b	3	1.5
102-20	6/24/1991	8	a	9	4.5	103-40-001	2/16/1991	21	a	19	9.5
102-20	6/24/1991	8	b	35	17.5	103-40-001	2/16/1991	21	b	21	10.5
102-20	6/24/1991	9	a	33	16.5	103-40-001	2/16/1991	22	a	61	30.5
102-20	6/24/1991	9	b	25	12.5	103-40-001	2/16/1991	22	b	37	18.5
102-20	6/24/1991	10	a	34	17	103-40-001	2/16/1991	23	a	14	7
102-20	6/24/1991	10	b	25	12.5	103-40-001	2/16/1991	23	b	16	8
102-20	6/24/1991	11	a	23	11.5	103-40-001	2/16/1991	24	a	12	6
102-20	6/24/1991	11	b	15	7.5	103-40-001	2/16/1991	24	b	11	5.5
102-20	6/24/1991	12	a	0	0	103-40-001	2/17/1991	25	a	10	5
102-20	6/24/1991	12	b	1	0.5	103-40-001	2/17/1991	25	b	28	14
102-20	6/24/1991	13	a	27	13.5	103-40-001	2/16/1991	26	a	19	9.5
102-20	6/24/1991	13	b	49	24.5	103-40-001	2/16/1991	26	b	32	16
102-20	6/24/1991	14	a	0	0	103-40-001	2/16/1991	27	a	24	12
102-20	6/24/1991	14	b	6	3	103-40-001	2/16/1991	27	b	22	11
102-20	6/24/1991	15	a	65	32.5	103-40-001	2/16/1991	28	a	13	6.5
102-20	6/24/1991	15	b	44	22	103-40-001	2/16/1991	28	b	38	19
102-20	6/24/1991	16	a	25	12.5	103-40-001	2/16/1991	29	a	14	7
102-20	6/24/1991	16	b	41	20.5	103-40-001	2/16/1991	29	b	20	10
102-20	6/24/1991	17	a	25	12.5	103-40-002	2/18/1991	42	a	17	8.5
102-20	6/24/1991	17	b	6	3	103-40-002	2/18/1991	42	b	26	13
102-80	6/22/1991	1	a	6	3	103-40-002	2/18/1991	43	a	53	26.5
102-80	6/22/1991	1	b	14	7	103-40-002	2/18/1991	44	a	1	0.5
102-80	6/22/1991	2	a	4	2	103-40-002	2/18/1991	44	b	13	6.5
102-80	6/22/1991	2	b	5	2.5	103-40-002	2/18/1991	46	a	44	22
102-80	6/22/1991	3	a	14	7	103-40-002	2/18/1991	46	b	55	27.5
102-80	6/22/1991	3	b	10	5	103-40-004	2/17/1991	16	a	15	7.5
102-80	6/22/1991	4	a	51	25.5	103-40-004	2/17/1991	16	b	33	16.5
102-80	6/22/1991	4	b	29	14.5	103-40-004	5/8/1991	16	a	37	18.5
102-80	6/22/1991	5	a	6	3	103-40-004	5/8/1991	16	b	26	13
102-80	6/22/1991	5	b	8	4	103-40-004	2/17/1991	17	a	34	17
102-80	6/22/1991	6	a	35	17.5	103-40-004	2/17/1991	17	b	27	13.5
102-80	6/22/1991	6	b	22	11	103-40-004	5/8/1991	17	a	39	19.5
102-80	6/20/1991	7	a	61	30.5	103-40-004	5/8/1991	17	b	38	19
102-80	6/20/1991	7	b	42	21	103-40-004	2/17/1991	18	a	34	17
102-80	6/20/1991	8	a	19	9.5	103-40-004	2/17/1991	18	b	33	16.5
102-80	6/20/1991	9	a	73	36.5	103-40-004	5/9/1991	18	a	17	8.5
102-80	6/20/1991	9	b	91	45.5	103-40-004	5/9/1991	18	b	20	10
102-80	6/20/1991	10	a	81	40.5	103-40-004	2/17/1991	19	a	5	2.5
102-80	6/20/1991	10	b	43	21.5	103-40-004	2/17/1991	19	b	1	0.5
102-80	6/22/1991	11	a	26	13	103-40-004	5/8/1991	19	a	21	10.5
102-80	6/22/1991	11	b	19	9.5	103-40-004	5/8/1991	19	b	19	9.5
102-80	6/21/1991	12	a	46	23	103-40-004	2/16/1991	30	a	0	0
102-80	6/21/1991	12	b	47	23.5	103-40-004	2/16/1991	30	b	8	4
102-80	6/21/1991	13	a	87	43.5	103-40-004	5/8/1991	30	a	5	2.5
102-80	6/21/1991	13	b	114	57	103-40-004	5/8/1991	30	b	10	5
102-80	6/21/1991	14	a	27	13.5	103-40-004	2/17/1991	31	a	29	14.5

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Appendix 4. (page 3 of 5)

Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m	Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m
103-40-004	2/17/1991	31	b	33	16.5	103-80	6/26/1991	4	a	19	9.5
103-40-004	5/9/1991	31	a	24	12	103-80	6/26/1991	4	b	21	10.5
103-40-004	5/9/1991	31	b	20	10	103-80	6/26/1991	5	a	67	33.5
103-40-004	2/17/1991	32	a	45	22.5	103-80	6/26/1991	5	b	66	33
103-40-004	2/17/1991	32	b	44	22	103-80	6/26/1991	6	a	19	9.5
103-40-004	5/9/1991	32	a	8	4	103-80	6/26/1991	6	b	26	13
103-40-004	5/9/1991	32	b	21	10.5	103-80	6/26/1991	7	a	55	27.5
103-40-004	2/17/1991	33	a	1	0.5	103-80	6/26/1991	7	b	58	29
103-40-004	2/17/1991	33	b	1	0.5	103-80	6/26/1991	8	a	0	0
103-40-004	5/8/1991	33	a	28	14	103-80	6/26/1991	8	b	0	0
103-40-004	5/8/1991	33	b	18	9	103-80	6/26/1991	9	a	21	10.5
103-40-004	2/17/1991	34	a	2	1	103-80	6/26/1991	9	b	23	11.5
103-40-004	2/17/1991	34	b	0	0	103-80	6/26/1991	10	a	15	7.5
103-40-004	2/17/1991	35	a	0	0	103-80	6/26/1991	10	b	13	6.5
103-40-004	2/17/1991	35	b	0	0	103-80	6/26/1991	11	a	42	21
103-40-004	2/18/1991	36	a	6	3	103-80	6/26/1991	11	b	34	17
103-40-004	2/18/1991	36	b	18	9	103-80	6/26/1991	12	a	0	0
103-40-004	2/18/1991	37	a	0	0	103-80	6/26/1991	12	b	0	0
103-40-004	2/18/1991	37	b	0	0	103-80	6/26/1991	13	a	0	0
103-40-004	2/18/1991	38	a	13	6.5	103-80	6/26/1991	13	b	0	0
103-40-004	2/18/1991	38	b	17	8.5	103-80	6/27/1991	14	a	185	92.5
103-40-004	5/8/1991	901	a	15	7.5	103-80	6/27/1991	14	b	176	88
103-40-004	5/8/1991	901	b	17	8.5	103-80	6/27/1991	15	a	12	6
103-40-004	5/8/1991	902	a	23	11.5	103-80	6/27/1991	15	b	17	8.5
103-40-004	5/8/1991	902	b	24	12	103-80	6/27/1991	16	a	0	0
103-40-004	5/8/1991	903	a	5	2.5	103-80	6/27/1991	16	b	0	0
103-40-004	5/8/1991	903	b	1	0.5	103-80	6/27/1991	17	a	19	9.5
103-40-004	5/8/1991	904	a	5	2.5	103-80	6/27/1991	17	b	11	5.5
103-40-004	5/8/1991	904	b	8	4	103-80	6/27/1991	18	a	14	7
103-40-004	5/8/1991	905	a	41	20.5	103-80	6/27/1991	18	b	8	4
103-40-004	5/8/1991	905	b	52	26	103-90-001	5/11/1991	1	a	6	3
103-40-004	5/8/1991	906	a	4	2	103-90-001	5/11/1991	1	b	1	0.5
103-40-004	5/8/1991	906	b	27	13.5	103-90-001	5/11/1991	2	a	18	9
103-40-004	5/8/1991	907	a	52	26	103-90-001	5/10/1991	3	a	3	1.5
103-40-004	5/8/1991	907	b	39	19.5	103-90-001	5/10/1991	4	a	51	25.5
103-40-004	5/9/1991	908	a	11	5.5	103-90-001	5/10/1991	4	b	52	26
103-40-004	5/9/1991	908	b	1	0.5	103-90-001	5/10/1991	5	a	9	4.5
103-40-004	5/9/1991	909	a	13	6.5	103-90-001	5/10/1991	5	b	6	3
103-40-004	5/9/1991	909	b	45	22.5	103-90-001	5/11/1991	6	a	3	1.5
103-40-004	5/8/1991	910	a	18	9	103-90-001	5/11/1991	6	b	0	0
103-40-004	5/8/1991	910	b	23	11.5	103-90-001	5/11/1991	7	a	19	9.5
103-40-004	5/9/1991	911	a	20	10	103-90-001	5/11/1991	7	b	15	7.5
103-40-004	5/9/1991	911	b	16	8	103-90-001	5/11/1991	8	a	51	25.5
103-80	6/25/1991	1	a	20	10	103-90-001	5/11/1991	8	b	88	44
103-80	6/25/1991	1	b	15	7.5	103-90-001	5/10/1991	9	a	77	38.5
103-80	6/25/1991	2	a	12	6	103-90-001	5/10/1991	9	b	82	41
103-80	6/25/1991	2	b	15	7.5	103-90-001	5/10/1991	10	a	6	3
103-80	6/26/1991	3	a	91	45.5	103-90-001	5/10/1991	10	b	24	12
103-80	6/26/1991	3	b	97	48.5	103-90-001	5/10/1991	11	a	89	44.5

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Appendix 4. (page 4 of 5)

Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m	Subdistrict	Date	Tran. No.	Tran. side	Sum of No cucs	Avg Cucs per m
103-90-001	5/11/1991	12	a	19	9.5	113-62,63,64,65,66	8/11/1991	6	b	11	5.5
103-90-001	5/11/1991	12	b	2	1	113-62,63,64,65,66	8/11/1991	7	a	0	0
103-90-001	5/10/1991	13	a	98	49	113-62,63,64,65,66	8/11/1991	7	b	4	2
103-90-001	5/10/1991	13	b	79	39.5	113-62,63,64,65,66	8/12/1991	8	a	149	74.5
103-90-001	5/11/1991	14	a	12	6	113-62,63,64,65,66	8/12/1991	8	b	133	66.5
103-90-001	5/11/1991	14	b	24	12	113-62,63,64,65,66	8/11/1991	9	a	15	7.5
103-90-001	5/11/1991	15	a	24	12	113-62,63,64,65,66	8/11/1991	9	b	24	12
103-90-001	5/11/1991	15	b	6	3	113-62,63,64,65,66	8/11/1991	10	a	3	1.5
112-11,21	8/13/1991	1	a	6	3	113-62,63,64,65,66	8/11/1991	10	b	2	1
112-11,21	8/13/1991	1	b	11	5.5	113-62,63,64,65,66	8/9/1991	11	a	22	11
112-11,21	8/13/1991	2	a	3	1.5	113-62,63,64,65,66	8/9/1991	11	b	14	7
112-11,21	8/13/1991	2	b	12	6	113-62,63,64,65,66	8/10/1991	12	a	1	0.5
112-11,21	8/13/1991	3	a	2	1	113-62,63,64,65,66	8/10/1991	12	b	1	0.5
112-11,21	8/13/1991	3	b	5	2.5	113-62,63,64,65,66	8/10/1991	13	a	1	0.5
112-11,21	8/15/1991	4	a	16	8	113-62,63,64,65,66	8/10/1991	13	b	0	0
112-11,21	8/15/1991	4	b	9	4.5	113-62,63,64,65,66	8/10/1991	14	a	0	0
112-11,21	8/14/1991	5	a	17	8.5	113-62,63,64,65,66	8/10/1991	14	b	1	0.5
112-11,21	8/14/1991	5	b	11	5.5	113-62,63,64,65,66	8/10/1991	15	a	76	38
112-11,21	8/14/1991	6	a	27	13.5	113-62,63,64,65,66	8/10/1991	15	b	78	39
112-11,21	8/14/1991	6	b	9	4.5	113-62,63,64,65,66	9/20/1991	16	a	7	3.5
112-11,21	8/14/1991	7	a	22	11	113-62,63,64,65,66	9/20/1991	16	b	8	4
112-11,21	8/14/1991	7	b	30	15	113-62,63,64,65,66	9/20/1991	17	a	41	20.5
112-11,21	8/14/1991	8	a	9	4.5	113-62,63,64,65,66	9/20/1991	17	b	84	42
112-11,21	8/14/1991	8	b	5	2.5	113-62,63,64,65,66	9/20/1991	18	a	19	9.5
112-11,21	8/14/1991	9	a	21	10.5	113-62,63,64,65,66	9/20/1991	18	b	19	9.5
112-11,21	8/14/1991	9	b	14	7	113-62,63,64,65,66	9/20/1991	19	a	5	2.5
112-11,21	8/14/1991	10	a	35	17.5	113-62,63,64,65,66	9/20/1991	19	b	1	0.5
112-11,21	8/14/1991	10	b	33	16.5	113-62,63,64,65,66	9/19/1991	20	a	10	5
112-11,21	8/14/1991	11	a	17	8.5	113-62,63,64,65,66	9/19/1991	20	b	10	5
112-11,21	8/14/1991	11	b	34	17	113-62,63,64,65,66	9/20/1991	21	a	4	2
112-11,21	8/14/1991	12	a	46	23	113-62,63,64,65,66	9/20/1991	21	b	7	3.5
112-11,21	8/14/1991	12	b	37	18.5	113-62,63,64,65,66	9/20/1991	22	a	2	1
112-11,21	8/13/1991	13	a	5	2.5	113-62,63,64,65,66	9/20/1991	22	b	3	1.5
112-11,21	8/13/1991	13	b	6	3	113-62,63,64,65,66	9/19/1991	23	a	24	12
112-11,21	8/13/1991	14	a	6	3	113-62,63,64,65,66	9/19/1991	23	b	55	27.5
112-11,21	8/13/1991	14	b	1	0.5	113-62,63,64,65,66	9/19/1991	24	a	0	0
112-11,21	8/13/1991	15	a	7	3.5	113-62,63,64,65,66	9/19/1991	24	b	0	0
112-11,21	8/13/1991	15	b	7	3.5	113-62,63,64,65,66	9/19/1991	25	a	64	32
113-62,63,64,65,66	8/10/1991	1	a	7	3.5	113-62,63,64,65,66	9/19/1991	25	b	18	9
113-62,63,64,65,66	8/10/1991	1	b	14	7	113-62,63,64,65,66	9/19/1991	26	a	28	14
113-62,63,64,65,66	8/10/1991	2	a	17	8.5	113-62,63,64,65,66	9/19/1991	26	b	11	5.5
113-62,63,64,65,66	8/10/1991	2	b	7	3.5	113-62,63,64,65,66	9/19/1991	27	a	4	2
113-62,63,64,65,66	8/10/1991	3	a	10	5	113-62,63,64,65,66	9/19/1991	27	b	35	17.5
113-62,63,64,65,66	8/10/1991	3	b	8	4	113-62,63,64,65,66	9/19/1991	28	a	8	4
113-62,63,64,65,66	8/11/1991	4	a	0	0	113-62,63,64,65,66	9/19/1991	28	b	14	7
113-62,63,64,65,66	8/11/1991	4	b	0	0	113-62,63,64,65,66	9/19/1991	29	a	4	2
113-62,63,64,65,66	8/11/1991	5	a	0	0	113-62,63,64,65,66	9/19/1991	29	b	1	0.5
113-62,63,64,65,66	8/11/1991	5	b	1	0.5	113-62,63,64,65,66	9/20/1991	30	a	16	8
113-62,63,64,65,66	8/11/1991	6	a	0	0	113-62,63,64,65,66	9/20/1991	30	b	28	14

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Appendix 4. (page 5 of 5)

Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m
113-71,72,73	8/7/1991	1	a	0	0
113-71,72,73	8/7/1991	1	b	0	0
113-71,72,73	8/7/1991	2	a	0	0
113-71,72,73	8/7/1991	2	b	0	0
113-71,72,73	8/7/1991	3	a	3	1.5
113-71,72,73	8/7/1991	3	b	8	4
113-71,72,73	8/7/1991	4	a	20	10
113-71,72,73	8/7/1991	5	a	22	11
113-71,72,73	8/7/1991	5	b	11	5.5
113-71,72,73	8/7/1991	6	a	106	53
113-71,72,73	8/7/1991	6	b	112	56
113-71,72,73	8/8/1991	7	a	0	0
113-71,72,73	8/8/1991	7	b	0	0
113-71,72,73	8/8/1991	8	a	0	0
113-71,72,73	8/8/1991	8	b	0	0
113-71,72,73	8/8/1991	9	a	14	7
113-71,72,73	8/8/1991	9	b	13	6.5
113-71,72,73	8/8/1991	10	a	0	0
113-71,72,73	8/8/1991	10	b	0	0
113-71,72,73	8/8/1991	11	a	0	0
113-71,72,73	8/8/1991	11	b	0	0
113-71,72,73	8/8/1991	12	a	27	13.5
113-71,72,73	8/8/1991	12	b	15	7.5
113-71,72,73	8/8/1991	13	a	4	2
113-71,72,73	8/8/1991	13	b	10	5
113-71,72,73	8/8/1991	14	a	4	2
113-71,72,73	8/8/1991	14	b	3	1.5
113-71,72,73	8/8/1991	15	a	0	0
113-71,72,73	8/8/1991	15	b	2	1

Appendix 5. Sea cucumber assessment survey transect details, 1994.

Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m	Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m
101-11	6/9/1994	2	a	52	26	101-27	4/20/1994	12	b	120	60
101-11	6/9/1994	2	b	91	45.5	101-27	4/20/1994	13	a	63	31.5
101-11	6/9/1994	4	a	20	10	101-27	4/20/1994	13	b	40	20
101-11	6/9/1994	4	b	23	11.5	101-90	6/8/1994	1	a	19	9.5
101-11	6/9/1994	6	a	47	23.5	101-90	6/8/1994	1	b	18	9
101-11	6/9/1994	8	a	9	4.5	101-90	6/8/1994	2	a	82	41
101-11	6/9/1994	8	b	3	1.5	101-90	6/8/1994	2	b	91	45.5
101-11	6/9/1994	10	a	38	19	101-90	6/8/1994	3	a	12	6
101-11	6/9/1994	10	b	19	9.5	101-90	6/8/1994	3	b	25	12.5
101-11	6/9/1994	12	a	38	19	101-90	6/8/1994	4	a	27	13.5
101-11	6/9/1994	12	b	37	18.5	101-90	6/8/1994	4	b	33	16.5
101-11	6/9/1994	14	a	61	30.5	101-90	6/8/1994	5	a	31	15.5
101-11	6/9/1994	14	b	39	19.5	101-90	6/8/1994	5	b	34	17
101-11	6/9/1994	16	a	37	18.5	101-90	6/8/1994	6	a	28	14
101-11	6/9/1994	16	b	29	14.5	101-90	6/8/1994	6	b	41	20.5
101-11	6/9/1994	18	a	31	15.5	101-90	6/8/1994	7	a	35	17.5
101-11	6/9/1994	18	b	16	8	101-90	6/8/1994	7	b	28	14
101-11	6/9/1994	20	a	102	51	101-90	6/7/1994	8	a	10	5
101-11	6/9/1994	20	b	60	30	101-90	6/7/1994	8	b	13	6.5
101-11	6/9/1994	22	a	24	12	101-90	6/7/1994	9	a	26	13
101-11	6/9/1994	22	b	24	12	101-90	6/7/1994	9	b	20	10
101-11	6/9/1994	24	a	5	2.5	101-90	6/7/1994	10	a	24	12
101-11	6/9/1994	24	b	1	0.5	101-90	6/7/1994	10	b	33	16.5
101-11	6/9/1994	26	a	0	0	101-90	6/7/1994	11	a	1	0.5
101-11	6/9/1994	26	b	0	0	101-90	6/7/1994	11	b	51	25.5
101-11	6/9/1994	28	a	1	0.5	101-90	6/7/1994	13	a	30	15
101-11	6/9/1994	28	b	1	0.5	101-90	6/7/1994	13	b	29	14.5
101-27	4/21/1994	1	a	33	16.5	101-90	6/7/1994	14	a	18	9
101-27	4/21/1994	1	b	19	9.5	101-90	6/7/1994	14	b	31	15.5
101-27	4/21/1994	2	a	44	22	101-90	6/7/1994	15	a	35	17.5
101-27	4/21/1994	2	b	39	19.5	101-90	6/7/1994	15	b	15	7.5
101-27	4/21/1994	3	a	40	20	101-90	6/7/1994	16	a	18	9
101-27	4/21/1994	3	b	18	9	101-90	6/7/1994	16	b	29	14.5
101-27	4/21/1994	4	a	48	24	101-90	6/7/1994	17	a	19	9.5
101-27	4/21/1994	4	b	44	22	101-90	6/7/1994	17	b	20	10
101-27	4/21/1994	5	a	12	6	101-90	6/7/1994	18	a	30	15
101-27	4/21/1994	5	b	13	6.5	101-90	6/7/1994	18	b	21	10.5
101-27	4/21/1994	6	a	13	6.5	101-90	6/8/1994	19	a	107	53.5
101-27	4/21/1994	6	b	29	14.5	101-90	6/8/1994	19	b	68	34
101-27	4/20/1994	7	a	9	4.5	102-20	6/10/1994	1	a	24	12
101-27	4/20/1994	7	b	7	3.5	102-20	6/10/1994	1	b	33	16.5
101-27	4/20/1994	8	a	9	4.5	102-20	6/10/1994	2	a	41	20.5
101-27	4/20/1994	8	b	8	4	102-20	6/10/1994	2	b	39	19.5
101-27	4/20/1994	9	a	27	13.5	102-20	6/10/1994	3	a	2	1
101-27	4/20/1994	9	b	30	15	102-20	6/10/1994	3	b	0	0
101-27	4/20/1994	10	a	162	81	102-20	6/10/1994	4	a	2	1
101-27	4/20/1994	10	b	193	96.5	102-20	6/10/1994	4	b	5	2.5
101-27	4/20/1994	11	a	42	21	102-20	6/10/1994	5	a	69	34.5
101-27	4/20/1994	11	b	31	15.5	102-20	6/10/1994	5	b	107	53.5
101-27	4/20/1994	12	a	122	61	102-20	6/10/1994	6	a	73	36.5

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Appendix 5. (page 2 of 4)

Subdistrict	Date	Tran. No.	Tran. side	Sum of No cucs	Avg Cucs Per m	Subdistrict	Date	Tran. No.	Tran. side	Sum of No cucs	Avg Cucs Per m
102-20	6/10/1994	6	b	99	49.5	103-40-001	6/12/1994	21	b	25	12.5
102-20	6/10/1994	8	a	1	0.5	103-40-001	6/13/1994	22	a	21	10.5
102-20	6/10/1994	8	b	0	0	103-40-001	6/13/1994	22	b	47	23.5
102-20	6/10/1994	9	a	24	12	103-40-001	6/12/1994	23	a	21	10.5
102-20	6/10/1994	9	b	49	24.5	103-40-001	6/12/1994	23	b	26	13
102-20	6/10/1994	10	a	21	10.5	103-40-001	6/12/1994	24	a	24	12
102-20	6/10/1994	10	b	30	15	103-40-001	6/12/1994	24	b	9	4.5
102-20	6/10/1994	11	a	17	8.5	103-40-001	6/12/1994	25	a	95	47.5
102-20	6/10/1994	11	b	17	8.5	103-40-001	6/12/1994	25	b	66	33
102-20	6/10/1994	12	a	0	0	103-40-001	6/13/1994	26	a	41	20.5
102-20	6/10/1994	12	b	0	0	103-40-001	6/13/1994	26	b	41	20.5
102-20	6/10/1994	13	a	42	21	103-40-001	6/13/1994	27	a	64	32
102-20	6/10/1994	13	b	44	22	103-40-001	6/13/1994	27	b	62	31
102-20	6/10/1994	15	a	86	43	103-40-001	6/12/1994	28	a	30	15
102-20	6/10/1994	15	b	97	48.5	103-40-001	6/12/1994	28	b	34	17
102-20	6/10/1994	16	a	14	7	103-40-001	6/12/1994	29	a	40	20
102-20	6/10/1994	16	b	27	13.5	103-40-001	6/12/1994	29	b	45	22.5
102-20	6/10/1994	17	a	11	5.5	103-40-001	6/13/1994	100	a	43	21.5
102-20	6/10/1994	17	b	4	2	103-40-001	6/13/1994	100	b	58	29
102-80	9/17/1994	2	a	23	11.5	103-40-001	6/12/1994	101	a	19	9.5
102-80	9/17/1994	2	b	51	25.5	103-40-001	6/12/1994	101	b	30	15
102-80	9/17/1994	3	a	72	36	103-80	6/15/1994	1	a	21	10.5
102-80	9/17/1994	3	b	143	71.5	103-80	6/15/1994	1	b	30	15
102-80	9/17/1994	4	a	9	4.5	103-80	6/15/1994	2	a	28	14
102-80	9/17/1994	4	b	11	5.5	103-80	6/15/1994	2	b	25	12.5
102-80	9/17/1994	5	a	10	5	103-80	6/14/1994	3	a	52	26
102-80	9/17/1994	5	b	5	2.5	103-80	6/14/1994	3	b	69	34.5
102-80	9/17/1994	6	a	31	15.5	103-80	6/15/1994	4	a	11	5.5
102-80	9/17/1994	6	b	26	13	103-80	6/15/1994	4	b	8	4
102-80	9/16/1994	7	a	9	4.5	103-80	6/14/1994	5	a	28	14
102-80	9/16/1994	7	b	12	6	103-80	6/14/1994	5	b	26	13
102-80	9/16/1994	8	a	94	47	103-80	6/15/1994	6	a	24	12
102-80	9/16/1994	8	b	156	78	103-80	6/15/1994	6	b	18	9
102-80	9/16/1994	9	a	156	78	103-80	6/14/1994	7	a	74	37
102-80	9/16/1994	9	b	115	57.5	103-80	6/14/1994	7	b	63	31.5
102-80	9/16/1994	10	a	174	87	103-80	6/14/1994	8	a	0	0
102-80	9/16/1994	10	b	57	28.5	103-80	6/14/1994	8	b	0	0
102-80	9/16/1994	11	a	35	17.5	103-80	6/14/1994	9	a	12	6
102-80	9/16/1994	11	b	47	23.5	103-80	6/14/1994	9	b	23	11.5
102-80	9/16/1994	12	a	47	23.5	103-80	6/14/1994	10	a	23	11.5
102-80	9/16/1994	12	b	16	8	103-80	6/14/1994	10	b	34	17
102-80	9/16/1994	13	a	49	24.5	103-80	6/14/1994	11	a	42	21
102-80	9/16/1994	13	b	52	26	103-80	6/14/1994	11	b	49	24.5
102-80	9/16/1994	14	a	34	17	103-80	6/14/1994	12	a	21	10.5
102-80	9/16/1994	14	b	13	6.5	103-80	6/14/1994	12	b	34	17
103-40-001	6/12/1994	1	a	54	27	103-80	6/14/1994	13	a	0	0
103-40-001	6/12/1994	2	a	72	36	103-80	6/14/1994	13	b	7	3.5
103-40-001	6/12/1994	20	a	5	2.5	103-80	6/14/1994	14	a	58	29
103-40-001	6/12/1994	20	b	30	15	103-80	6/14/1994	14	b	72	36
103-40-001	6/12/1994	21	a	62	31	103-80	6/14/1994	15	a	24	12

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Appendix 5. (page 3 of 4)

Subdistrict	Date	Tran. No.	Tran. side	Sum of No cucs	Avg Cucs Per m	Subdistrict	Date	Tran. No.	Tran. side	Sum of No cucs	Avg Cucs Per m
103-80	6/14/1994	15	b	29	14.5	109-44,45,50	6/28/1994	8	a	1	0.5
103-80	6/14/1994	16	a	0	0	109-44,45,50	6/28/1994	8	b	10	5
103-80	6/14/1994	16	b	0	0	109-44,45,50	6/28/1994	9	a	0	0
103-80	6/14/1994	17	a	2	1	109-44,45,50	6/28/1994	9	b	0	0
103-80	6/14/1994	17	b	0	0	109-44,45,50	6/28/1994	10	a	24	12
103-80	6/14/1994	18	a	11	5.5	109-44,45,50	6/28/1994	10	b	13	6.5
103-80	6/14/1994	18	b	21	10.5	109-44,45,50	6/28/1994	11	a	0	0
106-30	9/13/1994	1	a	308	154	109-44,45,50	6/28/1994	11	b	1	0.5
106-30	9/13/1994	2	a	15	7.5	109-44,45,50	6/28/1994	12	a	5	2.5
106-30	9/13/1994	2	b	44	22	109-44,45,50	6/28/1994	12	b	10	5
106-30	9/13/1994	3	a	122	61	109-44,45,50	6/28/1994	13	a	1	0.5
106-30	9/13/1994	3	b	47	23.5	109-44,45,50	6/28/1994	13	b	20	10
106-30	9/13/1994	4	a	17	8.5	109-44,45,50	6/28/1994	14	a	14	7
106-30	9/13/1994	4	b	20	10	109-44,45,50	6/28/1994	14	b	15	7.5
106-30	9/15/1994	5	a	91	45.5	112-11,21	6/26/1994	1	a	38	19
106-30	9/15/1994	5	b	57	28.5	112-11,21	6/26/1994	1	b	41	20.5
106-30	9/13/1994	6	a	18	9	112-11,21	6/27/1994	2	a	5	2.5
106-30	9/13/1994	6	b	8	4	112-11,21	6/27/1994	2	b	18	9
106-30	9/13/1994	7	a	102	51	112-11,21	6/26/1994	3	a	30	15
106-30	9/13/1994	7	b	28	14	112-11,21	6/26/1994	3	b	5	2.5
106-30	9/14/1994	8	a	65	32.5	112-11,21	6/26/1994	4	a	22	11
106-30	9/14/1994	8	b	69	34.5	112-11,21	6/26/1994	4	b	14	7
106-30	9/14/1994	9	a	151	75.5	112-11,21	6/26/1994	5	a	80	40
106-30	9/14/1994	9	b	96	48	112-11,21	6/26/1994	5	b	42	21
106-30	9/13/1994	10	a	320	160	112-11,21	6/27/1994	6	a	21	10.5
106-30	9/13/1994	10	b	103	51.5	112-11,21	6/27/1994	6	b	23	11.5
106-30	9/14/1994	11	a	29	14.5	112-11,21	6/26/1994	7	a	93	46.5
106-30	9/14/1994	11	b	10	5	112-11,21	6/26/1994	7	b	75	37.5
106-30	9/14/1994	12	a	20	10	112-11,21	6/27/1994	8	a	20	10
106-30	9/14/1994	12	b	20	10	112-11,21	6/27/1994	8	b	7	3.5
106-30	9/15/1994	13	a	131	65.5	112-11,21	6/27/1994	9	a	15	7.5
106-30	9/15/1994	13	b	182	91	112-11,21	6/27/1994	9	b	50	25
106-30	9/15/1994	14	a	27	13.5	112-11,21	6/27/1994	11	a	49	24.5
106-30	9/15/1994	14	b	10	5	112-11,21	6/27/1994	11	b	22	11
106-30	9/15/1994	15	a	1	0.5	112-11,21	6/27/1994	12	a	21	10.5
106-30	9/15/1994	15	b	0	0	112-11,21	6/27/1994	12	b	52	26
109-44,45,50	6/28/1994	1	a	0	0	112-11,21	6/27/1994	13	a	3	1.5
109-44,45,50	6/28/1994	1	b	2	1	112-11,21	6/27/1994	13	b	12	6
109-44,45,50	6/28/1994	2	a	0	0	112-11,21	6/27/1994	14	a	0	0
109-44,45,50	6/28/1994	2	b	0	0	112-11,21	6/27/1994	14	b	13	6.5
109-44,45,50	6/28/1994	3	a	0	0	113-62,63,64,65,66	6/26/1994	3	a	10	5
109-44,45,50	6/28/1994	3	b	0	0	113-62,63,64,65,66	6/26/1994	3	b	10	5
109-44,45,50	6/28/1994	4	a	0	0	113-62,63,64,65,66	6/25/1994	6	a	0	0
109-44,45,50	6/28/1994	4	b	0	0	113-62,63,64,65,66	6/25/1994	6	b	0	0
109-44,45,50	6/28/1994	5	a	7	3.5	113-62,63,64,65,66	6/25/1994	7	a	0	0
109-44,45,50	6/28/1994	5	b	4	2	113-62,63,64,65,66	6/25/1994	7	b	0	0
109-44,45,50	6/28/1994	6	a	0	0	113-62,63,64,65,66	6/25/1994	8	a	221	110.5
109-44,45,50	6/28/1994	6	b	0	0	113-62,63,64,65,66	6/25/1994	8	b	128	64
109-44,45,50	6/28/1994	7	a	30	15	113-62,63,64,65,66	6/25/1994	9	a	15	7.5
109-44,45,50	6/28/1994	7	b	25	12.5	113-62,63,64,65,66	6/25/1994	9	b	11	5.5

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Appendix 5. (page 4 of 4)

Subdistrict	Date	Tran. No.	Tran. side	Sum of No cucs	Avg Cucs per m	Subdistrict	Date	Tran. No.	Tran. side	Sum of No cucs	Avg Cucs Per m
113-62,63,64,65,66	6/25/1994	11	a	1	0.5	113-71,72,73	6/23/1994	14	a	1	0.5
113-62,63,64,65,66	6/25/1994	11	b	0	0	113-71,72,73	6/23/1994	14	b	0	0
113-62,63,64,65,66	6/25/1994	12	a	3	1.5	113-71,72,73	6/23/1994	15	a	0	0
113-62,63,64,65,66	6/25/1994	12	b	2	1	113-71,72,73	6/23/1994	15	b	0	0
113-62,63,64,65,66	6/25/1994	13	a	1	0.5	113-71,72,73	6/24/1994	16	a	0	0
113-62,63,64,65,66	6/25/1994	13	b	1	0.5	113-71,72,73	6/24/1994	16	b	3	1.5
113-62,63,64,65,66	6/26/1994	14	a	17	8.5	113-71,72,73	6/24/1994	17	a	6	3
113-62,63,64,65,66	6/26/1994	14	b	18	9	113-71,72,73	6/24/1994	17	b	6	3
113-62,63,64,65,66	6/25/1994	16	a	10	5	113-71,72,73	6/24/1994	18	a	21	10.5
113-62,63,64,65,66	6/25/1994	16	b	15	7.5	113-71,72,73	6/24/1994	18	b	37	18.5
113-62,63,64,65,66	6/25/1994	19	a	0	0	113-71,72,73	6/24/1994	19	a	19	9.5
113-62,63,64,65,66	6/25/1994	19	b	0	0	113-71,72,73	6/24/1994	19	b	18	9
113-62,63,64,65,66	6/25/1994	20	a	3	1.5	113-71,72,73	6/23/1994	20	a	3	1.5
113-62,63,64,65,66	6/25/1994	20	b	6	3	113-71,72,73	6/23/1994	20	b	3	1.5
113-62,63,64,65,66	6/25/1994	21	a	2	1	113-71,72,73	6/23/1994	21	a	6	3
113-62,63,64,65,66	6/25/1994	21	b	3	1.5	113-71,72,73	6/23/1994	21	b	0	0
113-62,63,64,65,66	6/25/1994	22	a	0	0	113-71,72,73	6/23/1994	22	a	1	0.5
113-62,63,64,65,66	6/25/1994	22	b	3	1.5	113-71,72,73	6/23/1994	22	b	0	0
113-62,63,64,65,66	6/26/1994	24	a	3	1.5	113-71,72,73	6/23/1994	23	a	18	9
113-62,63,64,65,66	6/26/1994	24	b	0	0	113-71,72,73	6/23/1994	23	b	17	8.5
113-62,63,64,65,66	6/26/1994	25	a	73	36.5						
113-62,63,64,65,66	6/26/1994	25	b	40	20						
113-62,63,64,65,66	6/26/1994	26	a	41	20.5						
113-62,63,64,65,66	6/26/1994	26	b	38	19						
113-62,63,64,65,66	6/26/1994	28	a	56	28						
113-62,63,64,65,66	6/26/1994	28	b	20	10						
113-62,63,64,65,66	6/26/1994	29	a	5	2.5						
113-62,63,64,65,66	6/26/1994	29	b	4	2						
113-62,63,64,65,66	6/25/1994	30	a	0	0						
113-62,63,64,65,66	6/25/1994	30	b	0	0						
113-71,72,73	6/23/1994	2	a	0	0						
113-71,72,73	6/23/1994	2	b	0	0						
113-71,72,73	6/23/1994	3	a	0	0						
113-71,72,73	6/23/1994	3	b	0	0						
113-71,72,73	6/23/1994	4	a	0	0						
113-71,72,73	6/23/1994	4	b	0	0						
113-71,72,73	6/24/1994	5	a	3	1.5						
113-71,72,73	6/24/1994	5	b	8	4						
113-71,72,73	6/24/1994	6	a	38	19						
113-71,72,73	6/24/1994	6	b	61	30.5						
113-71,72,73	6/23/1994	8	a	2	1						
113-71,72,73	6/23/1994	8	b	1	0.5						
113-71,72,73	6/23/1994	9	a	2	1						
113-71,72,73	6/23/1994	9	b	0	0						
113-71,72,73	6/23/1994	10	a	2	1						
113-71,72,73	6/23/1994	10	b	2	1						
113-71,72,73	6/23/1994	12	a	6	3						
113-71,72,73	6/23/1994	12	b	5	2.5						
113-71,72,73	6/23/1994	13	a	0	0						
113-71,72,73	6/23/1994	13	b	0	0						

Appendix 6. Sea cucumber assessment survey transect details, 1997.

Subdistrict	Date	Tran. No.	Tran. side	Sum of No cucs	Avg Cucs Per m	Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs Per m
101-11	6/13/1997	2	a	78	39	101-27	6/12/1997	12	a	45	22.5
101-11	6/13/1997	2	b	57	28.5	101-27	6/12/1997	12	b	88	44
101-11	6/13/1997	4	a	14	7	101-27	6/12/1997	13	a	35	17.5
101-11	6/13/1997	4	b	7	3.5	101-27	6/12/1997	13	b	52	26
101-11	6/13/1997	6	a	29	14.5	101-90	6/11/1997	1	a	0	0
101-11	6/13/1997	6	b	23	11.5	101-90	6/11/1997	1	b	0	0
101-11	6/13/1997	8	a	46	23	101-90	6/11/1997	2	a	32	16
101-11	6/13/1997	8	b	24	12	101-90	6/11/1997	2	b	31	15.5
101-11	6/13/1997	10	a	35	17.5	101-90	6/11/1997	3	a	42	21
101-11	6/13/1997	10	b	9	4.5	101-90	6/11/1997	3	b	32	16
101-11	6/13/1997	12	a	44	22	101-90	6/11/1997	4	a	29	14.5
101-11	6/13/1997	12	b	40	20	101-90	6/11/1997	4	b	40	20
101-11	6/13/1997	14	a	19	9.5	101-90	6/11/1997	5	a	30	15
101-11	6/13/1997	14	b	32	16	101-90	6/11/1997	5	b	44	22
101-11	6/13/1997	16	a	45	22.5	101-90	6/11/1997	6	a	16	8
101-11	6/13/1997	16	b	38	19	101-90	6/11/1997	6	b	26	13
101-11	6/13/1997	18	a	25	12.5	101-90	6/11/1997	7	a	25	12.5
101-11	6/13/1997	18	b	26	13	101-90	6/11/1997	7	b	44	22
101-11	6/13/1997	20	a	43	21.5	101-90	6/11/1997	8	a	3	1.5
101-11	6/13/1997	20	b	40	20	101-90	6/11/1997	8	b	7	3.5
101-11	6/13/1997	22	a	7	3.5	101-90	6/11/1997	9	a	25	12.5
101-11	6/13/1997	22	b	19	9.5	101-90	6/11/1997	9	b	7	3.5
101-11	6/13/1997	24	a	2	1	101-90	6/11/1997	10	a	18	9
101-11	6/13/1997	24	b	1	0.5	101-90	6/11/1997	10	b	31	15.5
101-11	6/13/1997	26	a	1	0.5	101-90	6/11/1997	11	a	11	5.5
101-11	6/13/1997	26	b	1	0.5	101-90	6/11/1997	11	b	23	11.5
101-11	6/13/1997	28	a	7	3.5	101-90	6/11/1997	13	a	11	5.5
101-11	6/13/1997	28	b	6	3	101-90	6/11/1997	13	b	14	7
101-27	6/12/1997	1	a	7	3.5	101-90	6/11/1997	14	a	12	6
101-27	6/12/1997	1	b	19	9.5	101-90	6/11/1997	14	b	17	8.5
101-27	6/12/1997	2	a	49	24.5	101-90	6/11/1997	15	a	22	11
101-27	6/12/1997	2	b	24	12	101-90	6/11/1997	15	b	38	19
101-27	6/12/1997	3	a	22	11	101-90	6/11/1997	16	a	2	1
101-27	6/12/1997	3	b	31	15.5	101-90	6/11/1997	16	b	18	9
101-27	6/12/1997	4	a	47	23.5	101-90	6/11/1997	17	a	25	12.5
101-27	6/12/1997	4	b	39	19.5	101-90	6/11/1997	17	b	18	9
101-27	6/12/1997	5	a	10	5	101-90	6/11/1997	18	a	24	12
101-27	6/12/1997	5	b	16	8	101-90	6/11/1997	18	b	38	19
101-27	6/12/1997	6	a	43	21.5	101-90	6/11/1997	19	a	33	16.5
101-27	6/12/1997	6	b	42	21	101-90	6/11/1997	19	b	55	27.5
101-27	6/12/1997	7	a	0	0	102-20	6/14/1997	1	a	14	7
101-27	6/12/1997	7	b	1	0.5	102-20	6/14/1997	1	b	21	10.5
101-27	6/12/1997	8	a	0	0	102-20	6/14/1997	2	a	19	9.5
101-27	6/12/1997	8	b	6	3	102-20	6/14/1997	2	b	29	14.5
101-27	6/12/1997	9	a	46	23	102-20	6/15/1997	3	a	0	0
101-27	6/12/1997	9	b	31	15.5	102-20	6/15/1997	3	b	1	0.5
101-27	6/12/1997	10	a	69	34.5	102-20	6/14/1997	4	a	15	7.5
101-27	6/12/1997	10	b	69	34.5	102-20	6/14/1997	4	b	8	4
101-27	6/12/1997	11	a	17	8.5	102-20	6/14/1997	5	a	39	19.5
101-27	6/12/1997	11	b	24	12	102-20	6/14/1997	5	b	39	19.5

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Appendix 6. (page 2 of 4)

Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m	Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m
102-20	6/14/1997	6 a		100	50	103-40-001	6/16/1997	1 a		14	7
102-20	6/14/1997	6 b		54	27	103-40-001	6/16/1997	1 b		31	15.5
102-20	6/15/1997	8 a		0	0	103-40-001	6/16/1997	2 a		18	9
102-20	6/15/1997	8 b		0	0	103-40-001	6/16/1997	2 b		18	9
102-20	6/15/1997	9 a		33	16.5	103-40-001	6/16/1997	20 a		20	10
102-20	6/15/1997	9 b		33	16.5	103-40-001	6/16/1997	20 b		9	4.5
102-20	6/15/1997	10 a		4	2	103-40-001	6/16/1997	21 a		35	17.5
102-20	6/15/1997	10 b		18	9	103-40-001	6/16/1997	21 b		25	12.5
102-20	6/15/1997	11 a		17	8.5	103-40-001	6/16/1997	22 a		26	13
102-20	6/15/1997	11 b		12	6	103-40-001	6/16/1997	22 b		45	22.5
102-20	6/15/1997	12 a		0	0	103-40-001	6/16/1997	23 a		20	10
102-20	6/15/1997	12 b		0	0	103-40-001	6/16/1997	23 b		15	7.5
102-20	6/15/1997	13 a		42	21	103-40-001	6/16/1997	24 a		13	6.5
102-20	6/15/1997	13 b		35	17.5	103-40-001	6/16/1997	24 b		10	5
102-20	6/15/1997	15 a		8	4	103-40-001	6/16/1997	25 a		82	41
102-20	6/15/1997	15 b		33	16.5	103-40-001	6/16/1997	25 b		48	24
102-20	6/15/1997	16 a		28	14	103-40-001	6/16/1997	26 a		53	26.5
102-20	6/15/1997	16 b		7	3.5	103-40-001	6/16/1997	26 b		47	23.5
102-20	6/15/1997	17 a		11	5.5	103-40-001	6/16/1997	27 a		36	18
102-20	6/15/1997	17 b		31	15.5	103-40-001	6/16/1997	27 b		60	30
102-20	6/15/1997	30 a		15	7.5	103-40-001	6/16/1997	28 a		9	4.5
102-20	6/15/1997	30 b		27	13.5	103-40-001	6/16/1997	28 b		2	1
102-80	6/10/1997	1 a		0	0	103-40-001	6/16/1997	29 a		27	13.5
102-80	6/10/1997	1 b		4	2	103-40-001	6/16/1997	29 b		19	9.5
102-80	6/10/1997	2 a		4	2	103-40-001	6/16/1997	100 a		28	14
102-80	6/10/1997	2 b		5	2.5	103-40-001	6/16/1997	100 b		36	18
102-80	6/10/1997	3 a		58	29	103-40-001	6/16/1997	101 a		17	8.5
102-80	6/10/1997	3 b		80	40	103-40-001	6/16/1997	101 b		23	11.5
102-80	6/10/1997	4 a		6	3	103-80	6/17/1997	1 a		16	8
102-80	6/10/1997	4 b		0	0	103-80	6/17/1997	1 b		11	5.5
102-80	6/10/1997	5 a		9	4.5	103-80	6/17/1997	2 a		21	10.5
102-80	6/10/1997	5 b		10	5	103-80	6/17/1997	2 b		27	13.5
102-80	6/10/1997	6 a		0	0	103-80	6/17/1997	3 a		51	25.5
102-80	6/10/1997	6 b		19	9.5	103-80	6/17/1997	3 b		40	20
102-80	6/10/1997	7 a		38	19	103-80	6/17/1997	4 a		34	17
102-80	6/10/1997	7 b		36	18	103-80	6/17/1997	4 b		24	12
102-80	6/10/1997	8 a		55	27.5	103-80	6/17/1997	5 a		35	17.5
102-80	6/10/1997	8 b		79	39.5	103-80	6/17/1997	5 b		41	20.5
102-80	6/10/1997	9 a		29	14.5	103-80	6/17/1997	6 a		18	9
102-80	6/10/1997	9 b		83	41.5	103-80	6/17/1997	6 b		23	11.5
102-80	6/10/1997	10 a		44	22	103-80	6/17/1997	7 a		54	27
102-80	6/10/1997	10 b		28	14	103-80	6/17/1997	7 b		42	21
102-80	6/10/1997	11 a		27	13.5	103-80	6/17/1997	8 a		0	0
102-80	6/10/1997	11 b		40	20	103-80	6/17/1997	9 a		26	13
102-80	6/10/1997	12 a		17	8.5	103-80	6/17/1997	9 b		17	8.5
102-80	6/10/1997	12 b		27	13.5	103-80	6/17/1997	10 a		14	7
102-80	6/10/1997	13 a		12	6	103-80	6/17/1997	10 b		13	6.5
102-80	6/10/1997	13 b		10	5	103-80	6/17/1997	11 a		37	18.5
102-80	6/10/1997	14 a		0	0	103-80	6/17/1997	11 b		26	13
102-80	6/10/1997	14 b		8	4	103-80	6/17/1997	12 a		27	13.5

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Appendix 6. (page 3 of 4)

Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m	Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m
103-80	6/17/1997	12 b		49	24.5	110-21,22,24	7/10/1997	5	a	0	0
103-80	6/18/1997	13 a		0	0	110-21,22,24	7/10/1997	5	b	0	0
103-80	6/18/1997	13 b		1	0.5	110-21,22,24	7/10/1997	6	a	1	0.5
103-80	6/18/1997	14 a		136	68	110-21,22,24	7/10/1997	6	b	4	2
103-80	6/18/1997	14 b		128	64	110-21,22,24	7/10/1997	7	a	0	0
103-80	6/18/1997	15 a		21	10.5	110-21,22,24	7/10/1997	7	b	0	0
103-80	6/18/1997	15 b		17	8.5	110-21,22,24	7/10/1997	8	a	0	0
103-80	6/17/1997	16 a		0	0	110-21,22,24	7/10/1997	8	b	0	0
103-80	6/18/1997	17 a		0	0	110-21,22,24	7/10/1997	9	a	0	0
103-80	6/18/1997	17 b		0	0	110-21,22,24	7/10/1997	9	b	0	0
103-80	6/17/1997	18 a		0	0	110-21,22,24	7/10/1997	10	a	4	2
103-80	6/17/1997	18 b		0	0	110-21,22,24	7/10/1997	10	b	4	2
106-30	7/8/1997	1 a		338	169	110-21,22,24	7/10/1997	11	a	0	0
106-30	7/8/1997	1 b		332	166	110-21,22,24	7/10/1997	11	b	0	0
106-30	7/8/1997	2 a		30	15	110-21,22,24	7/10/1997	12	a	14	7
106-30	7/8/1997	2 b		52	26	110-21,22,24	7/10/1997	12	b	14	7
106-30	7/8/1997	3 a		16	8	110-21,22,24	7/10/1997	13	a	4	2
106-30	7/8/1997	3 b		34	17	110-21,22,24	7/10/1997	13	b	3	1.5
106-30	7/8/1997	4 a		50	25	110-21,22,24	7/10/1997	14	a	4	2
106-30	7/8/1997	4 b		30	15	110-21,22,24	7/10/1997	14	b	0	0
106-30	7/8/1997	5 a		85	42.5	110-21,22,24	7/10/1997	15	a	23	11.5
106-30	7/8/1997	5 b		114	57	110-21,22,24	7/10/1997	15	b	22	11
106-30	7/9/1997	6 a		3	1.5	110-21,22,24	7/11/1997	16	a	20	10
106-30	7/9/1997	6 b		8	4	110-21,22,24	7/11/1997	16	b	19	9.5
106-30	7/8/1997	7 a		8	4	112-11,21	7/11/1997	2	a	10	5
106-30	7/8/1997	7 b		8	4	112-11,21	7/11/1997	2	b	4	2
106-30	7/9/1997	8 a		2	1	112-11,21	7/11/1997	3	a	50	25
106-30	7/9/1997	8 b		3	1.5	112-11,21	7/11/1997	3	b	3	1.5
106-30	7/8/1997	9 a		84	42	112-11,21	7/11/1997	4	a	8	4
106-30	7/8/1997	9 b		40	20	112-11,21	7/11/1997	4	b	12	6
106-30	7/8/1997	10 a		73	36.5	112-11,21	7/11/1997	5	a	17	8.5
106-30	7/8/1997	10 b		206	103	112-11,21	7/11/1997	5	b	22	11
106-30	7/8/1997	11 a		1	0.5	112-11,21	7/11/1997	6	a	12	6
106-30	7/8/1997	11 b		17	8.5	112-11,21	7/11/1997	6	b	5	2.5
106-30	7/8/1997	12 a		15	7.5	112-11,21	7/11/1997	7	a	23	11.5
106-30	7/8/1997	12 b		14	7	112-11,21	7/11/1997	7	b	14	7
106-30	7/8/1997	13 a		114	57	112-11,21	7/11/1997	8	a	1	0.5
106-30	7/8/1997	13 b		109	54.5	112-11,21	7/11/1997	8	b	5	2.5
106-30	7/8/1997	14 a		54	27	112-11,21	7/11/1997	9	a	20	10
106-30	7/8/1997	14 b		58	29	112-11,21	7/11/1997	9	b	22	11
106-30	7/8/1997	15 a		0	0	112-11,21	7/11/1997	10	a	2	1
106-30	7/8/1997	15 b		0	0	112-11,21	7/11/1997	10	b	36	18
110-21,22,24	7/10/1997	1 a		1	0.5	112-11,21	7/11/1997	11	a	18	9
110-21,22,24	7/10/1997	1 b		0	0	112-11,21	7/11/1997	11	b	11	5.5
110-21,22,24	7/10/1997	2 a		11	5.5	112-11,21	7/11/1997	12	a	9	4.5
110-21,22,24	7/10/1997	2 b		10	5	112-11,21	7/11/1997	12	b	5	2.5
110-21,22,24	7/10/1997	3 a		3	1.5	112-11,21	7/11/1997	13	a	7	3.5
110-21,22,24	7/10/1997	3 b		4	2	112-11,21	7/11/1997	13	b	0	0
110-21,22,24	7/10/1997	4 a		1	0.5	112-11,21	7/11/1997	14	a	10	5
110-21,22,24	7/10/1997	4 b		1	0.5	112-11,21	7/11/1997	14	b	8	4

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Appendix 6. (page 4 of 4)

Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m	Subdistrict	Date	Tran. No.	Tran. side	Sum of No cucs	Avg Cucs Per m
112-11,21	7/11/1997	16	a	20	10	113-62,63,64,65,66	7/15/1997	7	a	0	0
112-11,21	7/11/1997	16	b	19	9.5	113-62,63,64,65,66	7/15/1997	7	b	4	2
112-41,42	7/12/1997	2	a	38	19	113-62,63,64,65,66	7/15/1997	8	a	118	59
112-41,42	7/12/1997	2	b	47	23.5	113-62,63,64,65,66	7/15/1997	8	b	273	136.5
112-41,42	7/12/1997	4	a	46	23	113-62,63,64,65,66	7/15/1997	9	a	2	1
112-41,42	7/12/1997	4	b	30	15	113-62,63,64,65,66	7/15/1997	9	b	7	3.5
112-41,42	7/12/1997	6	a	33	16.5	113-62,63,64,65,66	7/14/1997	11	a	10	5
112-41,42	7/12/1997	6	b	36	18	113-62,63,64,65,66	7/14/1997	11	b	6	3
112-41,42	7/12/1997	8	a	7	3.5	113-62,63,64,65,66	7/14/1997	12	a	0	0
112-41,42	7/12/1997	8	b	7	3.5	113-62,63,64,65,66	7/14/1997	12	b	1	0.5
112-41,42	7/12/1997	10	a	18	9	113-62,63,64,65,66	7/14/1997	13	a	0	0
112-41,42	7/12/1997	10	b	16	8	113-62,63,64,65,66	7/14/1997	13	b	0	0
112-41,42	7/12/1997	12	a	151	75.5	113-62,63,64,65,66	7/15/1997	16	a	0	0
112-41,42	7/12/1997	12	b	79	39.5	113-62,63,64,65,66	7/15/1997	16	b	0	0
112-41,42	7/12/1997	14	a	36	18	113-62,63,64,65,66	7/14/1997	19	a	0	0
112-41,42	7/12/1997	14	b	15	7.5	113-62,63,64,65,66	7/14/1997	19	b	0	0
112-43,44,45,46,47,48	7/12/1997	1	a	37	18.5	113-62,63,64,65,66	7/14/1997	20	a	2	1
112-43,44,45,46,47,48	7/12/1997	1	b	49	24.5	113-62,63,64,65,66	7/14/1997	20	b	4	2
112-43,44,45,46,47,48	7/12/1997	2	a	4	2	113-62,63,64,65,66	7/14/1997	21	a	2	1
112-43,44,45,46,47,48	7/12/1997	2	b	15	7.5	113-62,63,64,65,66	7/14/1997	21	b	5	2.5
112-43,44,45,46,47,48	7/12/1997	3	a	112	56	113-62,63,64,65,66	7/14/1997	22	a	1	0.5
112-43,44,45,46,47,48	7/12/1997	3	b	148	74	113-62,63,64,65,66	7/14/1997	22	b	2	1
112-43,44,45,46,47,48	7/12/1997	4	a	0	0	113-62,63,64,65,66	7/14/1997	29	a	3	1.5
112-43,44,45,46,47,48	7/12/1997	4	b	0	0	113-62,63,64,65,66	7/14/1997	29	b	5	2.5
112-43,44,45,46,47,48	7/12/1997	5	a	28	14	113-62,63,64,65,66	7/15/1997	30	a	0	0
112-43,44,45,46,47,48	7/12/1997	5	b	23	11.5	113-62,63,64,65,66	7/15/1997	30	b	0	0
112-43,44,45,46,47,48	7/12/1997	6	a	31	15.5						
112-43,44,45,46,47,48	7/12/1997	6	b	32	16						
112-43,44,45,46,47,48	7/12/1997	7	a	25	12.5						
112-43,44,45,46,47,48	7/12/1997	7	b	24	12						
112-43,44,45,46,47,48	7/12/1997	8	a	25	12.5						
112-43,44,45,46,47,48	7/12/1997	8	b	19	9.5						
112-43,44,45,46,47,48	7/13/1997	9	a	0	0						
112-43,44,45,46,47,48	7/13/1997	9	b	0	0						
112-43,44,45,46,47,48	7/13/1997	10	a	9	4.5						
112-43,44,45,46,47,48	7/13/1997	10	b	6	3						
112-43,44,45,46,47,48	7/13/1997	11	a	11	5.5						
112-43,44,45,46,47,48	7/13/1997	11	b	14	7						
112-43,44,45,46,47,48	7/13/1997	12	a	10	5						
112-43,44,45,46,47,48	7/13/1997	12	b	3	1.5						
112-43,44,45,46,47,48	7/13/1997	13	a	7	3.5						
112-43,44,45,46,47,48	7/13/1997	13	b	4	2						
112-43,44,45,46,47,48	7/13/1997	14	a	34	17						
112-43,44,45,46,47,48	7/13/1997	14	b	35	17.5						
112-43,44,45,46,47,48	7/13/1997	15	a	10	5						
112-43,44,45,46,47,48	7/13/1997	15	b	11	5.5						
113-62,63,64,65,66	7/14/1997	3	a	1	0.5						
113-62,63,64,65,66	7/14/1997	3	b	3	1.5						
113-62,63,64,65,66	7/15/1997	6	a	0	0						
113-62,63,64,65,66	7/15/1997	6	b	0	0						

Appendix 7. Sea cucumber assessment survey transect details, 2000.

Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m	Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m
101-11	7/27/2000	1	a	12	6	101-11	7/25/2000	26	a	0	0
101-11	7/27/2000	1	b	12	6	101-11	7/25/2000	26	b	0	0
101-11	7/27/2000	2	a	78	39	101-11	7/25/2000	28	a	12	6
101-11	7/27/2000	2	b	66	33	101-11	7/25/2000	28	b	0	0
101-11	7/27/2000	3	a	73	36.5	101-11	7/25/2000	29	a	0	0
101-11	7/27/2000	3	b	45	22.5	101-11	7/25/2000	29	b	1	0.5
101-11	7/26/2000	4	a	14	7	101-25	7/7/2000	1	a	392	196
101-11	7/26/2000	4	b	20	10	101-25	7/7/2000	1	b	352	176
101-11	7/27/2000	5	a	5	2.5	101-25	7/7/2000	2	a	10	5
101-11	7/27/2000	5	b	4	2	101-25	7/7/2000	2	b	21	10.5
101-11	7/26/2000	6	a	8	4	101-25	7/7/2000	3	a	47	23.5
101-11	7/26/2000	6	b	15	7.5	101-25	7/7/2000	3	b	63	31.5
101-11	7/27/2000	7	a	45	22.5	101-25	7/7/2000	4	a	102	51
101-11	7/27/2000	7	b	47	23.5	101-25	7/7/2000	4	b	93	46.5
101-11	7/26/2000	8	a	17	8.5	101-25	7/7/2000	5	a	119	59.5
101-11	7/26/2000	8	b	13	6.5	101-25	7/7/2000	5	b	158	79
101-11	7/27/2000	9	a	6	3	101-25	7/7/2000	6	a	5	2.5
101-11	7/27/2000	9	b	2	1	101-25	7/7/2000	6	b	23	11.5
101-11	7/27/2000	10	a	28	14	101-25	7/7/2000	7	a	43	21.5
101-11	7/27/2000	10	b	38	19	101-25	7/7/2000	7	b	56	28
101-11	7/27/2000	11	a	68	34	101-25	7/7/2000	8	a	3	1.5
101-11	7/27/2000	11	b	22	11	101-25	7/7/2000	8	b	1	0.5
101-11	7/27/2000	12	a	36	18	101-25	7/7/2000	9	a	142	71
101-11	7/27/2000	12	b	30	15	101-25	7/7/2000	9	b	150	75
101-11	7/27/2000	13	a	10	5	101-25	7/7/2000	10	a	5	2.5
101-11	7/27/2000	13	b	14	7	101-25	7/7/2000	10	b	0	0
101-11	7/27/2000	14	a	26	13	101-25	7/8/2000	11	a	4	2
101-11	7/27/2000	14	b	39	19.5	101-25	7/8/2000	11	b	4	2
101-11	7/27/2000	15	a	124	62	101-25	7/8/2000	12	a	9	4.5
101-11	7/27/2000	15	b	38	19	101-25	7/8/2000	12	b	24	12
101-11	7/27/2000	16	a	37	18.5	101-25	7/8/2000	13	a	4	2
101-11	7/27/2000	16	b	30	15	101-25	7/8/2000	13	b	0	0
101-11	7/27/2000	17	a	0	0	101-25	7/7/2000	14	a	49	24.5
101-11	7/27/2000	17	b	0	0	101-25	7/7/2000	14	b	45	22.5
101-11	7/27/2000	18	a	28	14	101-25	7/7/2000	15	a	1	0.5
101-11	7/27/2000	18	b	27	13.5	101-25	7/7/2000	15	b	0	0
101-11	7/27/2000	19	a	28	14	101-25	7/8/2000	16	a	0	0
101-11	7/27/2000	19	b	27	13.5	101-25	7/8/2000	16	b	0	0
101-11	7/27/2000	20	a	26	13	101-25	7/7/2000	17	a	38	19
101-11	7/27/2000	20	b	46	23	101-25	7/7/2000	17	b	27	13.5
101-11	7/27/2000	21	a	17	8.5	101-25	7/8/2000	18	a	0	0
101-11	7/27/2000	21	b	8	4	101-25	7/8/2000	18	b	3	1.5
101-11	7/27/2000	22	a	10	5	101-25	7/7/2000	19	a	71	35.5
101-11	7/27/2000	22	b	16	8	101-25	7/7/2000	19	b	68	34
101-11	7/26/2000	23	a	8	4	101-25	7/7/2000	20	a	11	5.5
101-11	7/26/2000	23	b	4	2	101-25	7/7/2000	20	b	9	4.5
101-11	7/26/2000	24	a	7	3.5	101-25	7/7/2000	21	a	209	104.5
101-11	7/26/2000	24	b	2	1	101-25	7/7/2000	21	b	204	102
101-11	7/25/2000	25	a	0	0	101-25	7/7/2000	22	a	28	14
101-11	7/25/2000	25	b	0	0	101-25	7/7/2000	22	b	45	22.5

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Appendix 7. (page 2 of 6)

Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m	Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m
101-25	36714	23 a		41	20.5	101-90	6/24/2000	7	a	17	8.5
101-25	36714	23 b		39	19.5	101-90	6/24/2000	7	b	19	9.5
101-25	36714	24 a		4	2	101-90	6/24/2000	8	a	8	4
101-25	36714	24 b		7	3.5	101-90	6/24/2000	8	b	15	7.5
101-25	36704	25 a		9	4.5	101-90	6/24/2000	9	a	15	7.5
101-25	36704	25 b		21	10.5	101-90	6/24/2000	9	b	19	9.5
101-25	36704	26 a		9	4.5	101-90	6/23/2000	10	a	44	22
101-25	36704	26 b		3	1.5	101-90	6/23/2000	10	b	38	19
101-30	36732	1 a		19	9.5	101-90	6/23/2000	11	a	22	11
101-30	36732	1 b		7	3.5	101-90	6/23/2000	11	b	18	9
101-30	36709	2 a		9	4.5	101-90	6/23/2000	13	a	20	10
101-30	36709	2 b		13	6.5	101-90	6/23/2000	13	b	19	9.5
101-30	36709	3 a		18	9	101-90	6/23/2000	14	a	33	16.5
101-30	36709	3 b		24	12	101-90	6/23/2000	14	b	28	14
101-30	36731	4 a		1	0.5	101-90	6/24/2000	15	a	33	16.5
101-30	36731	4 b		0	0	101-90	6/24/2000	15	b	24	12
101-30	36731	5 a		0	0	101-90	6/24/2000	16	a	12	6
101-30	36731	5 b		1	0.5	101-90	6/24/2000	16	b	10	5
101-30	36731	6 a		1	0.5	101-90	6/24/2000	17	a	23	11.5
101-30	36731	6 b		0	0	101-90	6/24/2000	17	b	28	14
101-30	36731	7 a		8	4	101-90	6/23/2000	18	a	31	15.5
101-30	36731	7 b		9	4.5	101-90	6/23/2000	18	b	17	8.5
101-30	36731	8 a		4	2	101-90	6/24/2000	19	a	79	39.5
101-30	36731	8 b		7	3.5	101-90	6/24/2000	19	b	87	43.5
101-30	36731	9 a		14	7	101-90	6/24/2000	20	a	15	7.5
101-30	36731	9 b		13	6.5	101-90	6/24/2000	20	b	14	7
101-30	36731	10 a		3	1.5	101-90	6/24/2000	21	a	66	33
101-30	36731	10 b		2	1	101-90	6/24/2000	21	b	39	19.5
101-30	36731	11 a		4	2	101-90	6/23/2000	22	a	29	14.5
101-30	36731	11 b		4	2	101-90	6/23/2000	22	b	35	17.5
101-30	36731	12 a		2	1	101-90	6/23/2000	23	a	11	5.5
101-30	36731	12 b		0	0	101-90	6/23/2000	23	b	14	7
101-30	36732	13 a		25	12.5	101-90	6/24/2000	24	a	32	16
101-30	36732	13 b		14	7	101-90	6/24/2000	24	b	38	19
101-30	36732	14 a		28	14	101-90	6/24/2000	25	a	12	6
101-30	36732	14 b		20	10	101-90	6/24/2000	25	b	9	4.5
101-30	36732	15 a		24	12	101-90	6/24/2000	26	a	45	22.5
101-30	36732	15 b		35	17.5	101-90	6/24/2000	26	b	55	27.5
101-90	36701	1 a		0	0	102-20	7/22/2000	1	a	21	10.5
101-90	36701	1 b		0	0	102-20	7/22/2000	1	b	23	11.5
101-90	36701	2 a		26	13	102-20	7/22/2000	2	a	32	16
101-90	36701	2 b		27	13.5	102-20	7/22/2000	2	b	32	16
101-90	36701	3 a		37	18.5	102-20	7/22/2000	3	a	3	1.5
101-90	36701	3 b		21	10.5	102-20	7/22/2000	3	b	0	0
101-90	36701	4 a		55	27.5	102-20	7/22/2000	4	a	12	6
101-90	36701	4 b		45	22.5	102-20	7/22/2000	4	b	16	8
101-90	36701	5 a		42	21	102-20	7/22/2000	5	a	84	42
101-90	36701	5 b		41	20.5	102-20	7/22/2000	5	b	90	45
101-90	36701	6 a		30	15	102-20	7/22/2000	6	a	11	5.5
101-90	36701	6 b		36	18	102-20	7/22/2000	6	b	12	6

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Appendix 7. (page 3 of 6)

Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs Per m	Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m
102-20	7/23/2000	7	a	44	22	103-21,30	7/21/1999	1	a	1	0.5
102-20	7/23/2000	7	b	44	22	103-21,30	7/21/1999	1	b	0	0
102-20	7/23/2000	8	a	1	0.5	103-21,30	7/22/1999	2	a	12	6
102-20	7/23/2000	8	b	1	0.5	103-21,30	7/22/1999	2	b	9	4.5
102-20	7/23/2000	9	a	48	24	103-21,30	7/22/1999	3	a	64	32
102-20	7/23/2000	9	b	36	18	103-21,30	7/22/1999	3	b	84	42
102-20	7/23/2000	10	a	29	14.5	103-21,30	7/22/1999	4	a	11	5.5
102-20	7/23/2000	10	b	22	11	103-21,30	7/22/1999	4	b	14	7
102-20	7/23/2000	11	a	10	5	103-21,30	7/22/1999	5	a	15	7.5
102-20	7/23/2000	11	b	7	3.5	103-21,30	7/22/1999	5	b	30	15
102-20	7/23/2000	12	a	0	0	103-21,30	7/22/1999	6	a	45	22.5
102-20	7/23/2000	12	b	0	0	103-21,30	7/22/1999	6	b	36	18
102-20	7/23/2000	13	a	22	11	103-21,30	7/22/1999	7	a	106	53
102-20	7/23/2000	13	b	27	13.5	103-21,30	7/22/1999	7	b	74	37
102-20	7/23/2000	15	a	27	13.5	103-21,30	7/22/1999	8	a	20	10
102-20	7/23/2000	15	b	26	13	103-21,30	7/22/1999	8	b	21	10.5
102-20	7/23/2000	16	a	5	2.5	103-21,30	7/22/1999	9	a	24	12
102-20	7/23/2000	16	b	4	2	103-21,30	7/22/1999	9	b	31	15.5
102-20	7/23/2000	17	a	2	1	103-21,30	7/22/1999	10	a	17	8.5
102-20	7/23/2000	17	b	4	2	103-21,30	7/22/1999	10	b	17	8.5
102-20	7/23/2000	30	a	41	20.5	103-21,30	7/22/1999	11	a	1	0.5
102-20	7/23/2000	30	b	27	13.5	103-21,30	7/22/1999	11	b	0	0
102-80	6/23/2000	1	a	6	3	103-21,30	7/21/1999	12	a	2	1
102-80	6/23/2000	1	b	2	1	103-21,30	7/21/1999	12	b	0	0
102-80	6/23/2000	2	a	8	4	103-21,30	7/21/1999	13	a	17	8.5
102-80	6/23/2000	2	b	21	10.5	103-21,30	7/21/1999	13	b	6	3
102-80	6/23/2000	3	a	43	21.5	103-21,30	7/21/1999	14	a	3	1.5
102-80	6/23/2000	3	b	43	21.5	103-21,30	7/21/1999	14	b	1	0.5
102-80	6/23/2000	4	a	17	8.5	103-21,30	7/21/1999	15	a	1	0.5
102-80	6/23/2000	4	b	9	4.5	103-21,30	7/21/1999	15	b	0	0
102-80	6/23/2000	5	a	1	0.5	103-21,30	8/25/2000	16	a	0	0
102-80	6/23/2000	5	b	4	2	103-21,30	8/25/2000	16	b	1	0.5
102-80	6/23/2000	6	a	40	20	103-21,30	8/25/2000	17	a	5	2.5
102-80	6/23/2000	6	b	32	16	103-21,30	8/25/2000	17	b	4	2
102-80	6/23/2000	7	a	5	2.5	103-21,30	8/25/2000	18	a	73	36.5
102-80	6/23/2000	7	b	10	5	103-21,30	8/25/2000	18	b	28	14
102-80	6/23/2000	8	a	107	53.5	103-21,30	8/25/2000	19	a	6	3
102-80	6/23/2000	8	b	136	68	103-21,30	8/25/2000	19	b	6	3
102-80	6/22/2000	9	a	122	61	103-21,30	8/26/2000	20	a	32	16
102-80	6/22/2000	9	b	91	45.5	103-21,30	8/26/2000	20	b	28	14
102-80	6/22/2000	10	a	51	25.5	103-21,30	8/26/2000	21	a	12	6
102-80	6/23/2000	10	b	34	17	103-21,30	8/26/2000	21	b	22	11
102-80	6/22/2000	11	a	53	26.5	103-21,30	8/26/2000	22	a	0	0
102-80	6/22/2000	11	b	22	11	103-21,30	8/26/2000	22	b	0	0
102-80	6/22/2000	12	a	14	7	103-21,30	8/26/2000	23	a	103	51.5
102-80	6/22/2000	12	b	16	8	103-21,30	8/26/2000	23	b	117	58.5
102-80	6/22/2000	13	a	71	35.5	103-21,30	8/25/2000	24	a	24	12
102-80	6/22/2000	13	b	70	35	103-21,30	8/25/2000	24	b	25	12.5
102-80	6/22/2000	14	a	38	19	103-80	6/5/2000	1	a	7	3.5
102-80	6/22/2000	14	b	8	4	103-80	6/5/2000	1	b	12	6

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Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs Per m	Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m
103-80	6/5/2000	2	a	17	8.5	106-30	6/20/2000	10	a	153	76.5
103-80	6/5/2000	2	b	17	8.5	106-30	6/20/2000	10	b	98	49
103-80	6/5/2000	3	a	47	23.5	106-30	6/20/2000	11	a	3	1.5
103-80	6/5/2000	3	b	41	20.5	106-30	6/20/2000	11	b	7	3.5
103-80	6/5/2000	4	a	9	4.5	106-30	6/21/2000	12	a	21	10.5
103-80	6/5/2000	4	b	13	6.5	106-30	6/21/2000	12	b	17	8.5
103-80	6/5/2000	5	a	52	26	106-30	6/21/2000	13	a	64	32
103-80	6/5/2000	5	b	59	29.5	106-30	6/21/2000	13	b	81	40.5
103-80	6/5/2000	6	a	19	9.5	106-30	6/21/2000	14	a	38	19
103-80	6/5/2000	6	b	19	9.5	106-30	6/21/2000	14	b	31	15.5
103-80	6/5/2000	7	a	21	10.5	106-30	6/21/2000	15	a	0	0
103-80	6/5/2000	7	b	9	4.5	106-30	6/21/2000	15	b	0	0
103-80	6/5/2000	8	a	0	0	106-30	6/21/2000	16	a	88	44
103-80	6/5/2000	9	a	9	4.5	106-30	6/21/2000	16	b	100	50
103-80	6/5/2000	9	b	7	3.5	106-30	6/20/2000	17	a	3	1.5
103-80	6/5/2000	10	a	31	15.5	106-30	6/20/2000	17	b	0	0
103-80	6/5/2000	10	b	29	14.5	106-30	6/21/2000	18	a	55	27.5
103-80	6/5/2000	11	a	14	7	106-30	6/21/2000	18	b	48	24
103-80	6/5/2000	11	b	15	7.5	109-30	9/7/2000	1	a	0	0
103-80	6/5/2000	12	a	31	15.5	109-30	9/7/2000	1	b	1	0.5
103-80	6/5/2000	12	b	30	15	109-30	9/7/2000	2	a	1	0.5
103-80	6/5/2000	13	a	1	0.5	109-30	9/7/2000	2	b	1	0.5
103-80	6/5/2000	13	b	0	0	109-30	9/7/2000	3	a	1	0.5
103-80	6/5/2000	14	a	0	0	109-30	9/7/2000	3	b	11	5.5
103-80	6/5/2000	14	b	3	1.5	109-30	9/7/2000	4	a	0	0
103-80	6/5/2000	15	a	0	0	109-30	9/7/2000	4	b	4	2
103-80	6/5/2000	15	b	0	0	109-30	9/7/2000	5	a	14	7
103-80	6/5/2000	16	a	0	0	109-30	9/7/2000	5	b	23	11.5
103-80	6/5/2000	17	a	0	0	109-30	9/7/2000	6	a	1	0.5
103-80	6/5/2000	17	b	0	0	109-30	9/7/2000	6	b	0	0
103-80	6/5/2000	18	a	0	0	109-30	9/7/2000	7	a	0	0
103-80	6/5/2000	18	b	0	0	109-30	9/7/2000	7	b	0	0
106-30	6/20/2000	1	a	128	64	109-30	9/7/2000	8	a	5	2.5
106-30	6/20/2000	1	b	142	71	109-30	9/7/2000	8	b	6	3
106-30	6/21/2000	2	a	39	19.5	109-30	9/6/2000	9	a	5	2.5
106-30	6/21/2000	2	b	37	18.5	109-30	9/6/2000	9	b	26	13
106-30	6/21/2000	3	a	71	35.5	109-30	9/6/2000	10	a	21	10.5
106-30	6/21/2000	3	b	49	24.5	109-30	9/6/2000	10	b	9	4.5
106-30	6/21/2000	4	a	66	33	109-30	9/6/2000	11	a	9	4.5
106-30	6/21/2000	4	b	79	39.5	109-30	9/6/2000	11	b	2	1
106-30	6/21/2000	5	a	107	53.5	109-30	9/6/2000	12	a	0	0
106-30	6/21/2000	5	b	65	32.5	109-30	9/6/2000	12	b	2	1
106-30	6/20/2000	6	a	15	7.5	109-30	9/6/2000	13	a	10	5
106-30	6/20/2000	6	b	4	2	109-30	9/6/2000	13	b	10	5
106-30	6/20/2000	7	a	27	13.5	109-30	9/7/2000	14	a	7	3.5
106-30	6/20/2000	7	b	23	11.5	109-30	9/7/2000	14	b	13	6.5
106-30	6/20/2000	8	a	1	0.5	109-30	9/7/2000	15	a	19	9.5
106-30	6/20/2000	8	b	2	1	109-30	9/7/2000	15	b	16	8
106-30	6/20/2000	9	a	100	50	112-11,21	5/8/2000	1	a	19	9.5
106-30	6/20/2000	9	b	33	16.5	112-11,21	5/8/2000	1	b	11	5.5

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Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m	Subdistrict	Date	Tran. No.	Tran. side	Sum of No cucs	Avg Cucs per m
112-11,21	5/8/2000	2	a	9	4.5	112-41,42	5/4/2000	12	a	101	50.5
112-11,21	5/8/2000	2	b	5	2.5	112-41,42	5/4/2000	12	b	118	59
112-11,21	5/8/2000	3	a	14	7	112-41,42	5/4/2000	13	a	11	5.5
112-11,21	5/8/2000	3	b	9	4.5	112-41,42	5/4/2000	13	b	17	8.5
112-11,21	5/8/2000	4	a	21	10.5	112-41,42	5/4/2000	14	a	41	20.5
112-11,21	5/8/2000	4	b	24	12	112-41,42	5/4/2000	14	b	42	21
112-11,21	5/8/2000	5	a	12	6	112-41,42	5/4/2000	15	a	14	7
112-11,21	5/8/2000	5	b	23	11.5	112-41,42	5/4/2000	15	b	8	4
112-11,21	5/8/2000	6	a	48	24	112-43,44,45,46,47,48	5/5/2000	1	a	46	23
112-11,21	5/8/2000	6	b	23	11.5	112-43,44,45,46,47,48	5/5/2000	1	b	34	17
112-11,21	5/8/2000	7	a	20	10	112-43,44,45,46,47,48	5/5/2000	2	a	7	3.5
112-11,21	5/8/2000	7	b	24	12	112-43,44,45,46,47,48	5/5/2000	2	b	6	3
112-11,21	5/8/2000	8	a	6	3	112-43,44,45,46,47,48	5/5/2000	3	a	70	35
112-11,21	5/8/2000	8	b	5	2.5	112-43,44,45,46,47,48	5/5/2000	3	b	92	46
112-11,21	5/8/2000	9	a	15	7.5	112-43,44,45,46,47,48	5/5/2000	4	a	0	0
112-11,21	5/8/2000	9	b	25	12.5	112-43,44,45,46,47,48	5/5/2000	4	b	2	1
112-11,21	5/8/2000	10	a	24	12	112-43,44,45,46,47,48	5/5/2000	5	a	10	5
112-11,21	5/8/2000	10	b	28	14	112-43,44,45,46,47,48	5/5/2000	5	b	10	5
112-11,21	5/8/2000	11	a	18	9	112-43,44,45,46,47,48	5/5/2000	6	a	10	5
112-11,21	5/8/2000	11	b	15	7.5	112-43,44,45,46,47,48	5/5/2000	6	b	7	3.5
112-11,21	5/8/2000	12	a	24	12	112-43,44,45,46,47,48	5/5/2000	7	a	19	9.5
112-11,21	5/8/2000	12	b	16	8	112-43,44,45,46,47,48	5/5/2000	7	b	25	12.5
112-11,21	5/9/2000	13	a	1	0.5	112-43,44,45,46,47,48	5/5/2000	8	a	34	17
112-11,21	5/9/2000	13	b	2	1	112-43,44,45,46,47,48	5/5/2000	8	b	45	22.5
112-11,21	5/8/2000	14	a	1	0.5	112-43,44,45,46,47,48	5/5/2000	9	a	0	0
112-11,21	5/8/2000	14	b	5	2.5	112-43,44,45,46,47,48	5/5/2000	9	b	0	0
112-11,21	5/8/2000	15	a	24	12	112-43,44,45,46,47,48	5/5/2000	10	a	5	2.5
112-11,21	5/8/2000	15	b	16	8	112-43,44,45,46,47,48	5/5/2000	10	b	6	3
112-41,42	5/4/2000	1	a	41	20.5	112-43,44,45,46,47,48	5/5/2000	11	a	11	5.5
112-41,42	5/4/2000	1	b	48	24	112-43,44,45,46,47,48	5/5/2000	11	b	5	2.5
112-41,42	5/4/2000	2	a	55	27.5	112-43,44,45,46,47,48	5/5/2000	12	a	13	6.5
112-41,42	5/4/2000	2	b	61	30.5	112-43,44,45,46,47,48	5/5/2000	12	b	4	2
112-41,42	5/4/2000	3	a	24	12	112-43,44,45,46,47,48	5/5/2000	13	a	21	10.5
112-41,42	5/4/2000	3	b	29	14.5	112-43,44,45,46,47,48	5/5/2000	13	b	11	5.5
112-41,42	5/5/2000	4	a	24	12	112-43,44,45,46,47,48	5/5/2000	14	a	20	10
112-41,42	5/5/2000	4	b	27	13.5	112-43,44,45,46,47,48	5/5/2000	14	b	13	6.5
112-41,42	5/4/2000	5	a	27	13.5	112-43,44,45,46,47,48	5/5/2000	15	a	13	6.5
112-41,42	5/4/2000	5	b	42	21	112-43,44,45,46,47,48	5/5/2000	15	b	18	9
112-41,42	5/4/2000	6	a	38	19	113-62,63,64,65,66	6/1/2000	3	a	1	0.5
112-41,42	5/4/2000	6	b	22	11	113-62,63,64,65,66	6/1/2000	3	b	0	0
112-41,42	5/5/2000	7	a	0	0	113-62,63,64,65,66	6/1/2000	6	a	0	0
112-41,42	5/5/2000	7	b	1	0.5	113-62,63,64,65,66	6/1/2000	6	b	0	0
112-41,42	5/4/2000	8	a	1	0.5	113-62,63,64,65,66	6/1/2000	7	a	0	0
112-41,42	5/4/2000	8	b	3	1.5	113-62,63,64,65,66	6/1/2000	7	b	0	0
112-41,42	5/4/2000	9	a	8	4	113-62,63,64,65,66	6/1/2000	8	a	124	62
112-41,42	5/4/2000	9	b	46	23	113-62,63,64,65,66	6/1/2000	8	b	141	70.5
112-41,42	5/4/2000	10	a	22	11	113-62,63,64,65,66	6/1/2000	9	a	1	0.5
112-41,42	5/4/2000	10	b	15	7.5	113-62,63,64,65,66	6/1/2000	9	b	4	2
112-41,42	5/4/2000	11	a	9	4.5	113-62,63,64,65,66	6/1/2000	10	a	1	0.5
112-41,42	5/4/2000	11	b	13	6.5	113-62,63,64,65,66	6/1/2000	10	b	1	0.5

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Subdistrict	Date	Tran. No.	Tran. side	Sum Of No cucs	Avg Cucs per m
113-62,63,64,65,66	6/1/2000	11	a	3	1.5
113-62,63,64,65,66	6/1/2000	11	b	3	1.5
113-62,63,64,65,66	6/1/2000	12	a	0	0
113-62,63,64,65,66	6/1/2000	12	b	3	1.5
113-62,63,64,65,66	6/1/2000	16	a	0	0
113-62,63,64,65,66	6/1/2000	16	b	0	0
113-62,63,64,65,66	6/1/2000	19	a	0	0
113-62,63,64,65,66	6/1/2000	19	b	0	0
113-62,63,64,65,66	6/1/2000	20	a	2	1
113-62,63,64,65,66	6/1/2000	20	b	5	2.5
113-62,63,64,65,66	6/1/2000	21	a	10	5
113-62,63,64,65,66	6/1/2000	21	b	14	7
113-62,63,64,65,66	6/1/2000	22	a	1	0.5
113-62,63,64,65,66	6/1/2000	22	b	0	0
113-62,63,64,65,66	6/1/2000	23	a	25	12.5
113-62,63,64,65,66	6/1/2000	23	b	27	13.5
113-62,63,64,65,66	6/1/2000	24	a	1	0.5
113-62,63,64,65,66	6/1/2000	24	b	2	1
113-62,63,64,65,66	6/1/2000	25	a	58	29
113-62,63,64,65,66	6/1/2000	25	b	51	25.5
113-62,63,64,65,66	6/1/2000	26	a	3	1.5
113-62,63,64,65,66	6/1/2000	26	b	6	3
113-62,63,64,65,66	6/1/2000	28	a	37	18.5
113-62,63,64,65,66	6/1/2000	28	b	39	19.5
113-62,63,64,65,66	6/1/2000	29	a	3	1.5
113-62,63,64,65,66	6/1/2000	29	b	2	1
113-62,63,64,65,66	6/1/2000	30	a	0	0
113-62,63,64,65,66	6/1/2000	30	b	0	0

Appendix 8. Sea cucumber weights by subdistrict from assessment surveys, 1994.

1994 101-10,11 Transect #							1994 101-90, West Behm Canal				
N	14	16	18	20	20 (cont.)	22	22 (cont.)	Total	Transect #	8	8 (cont.)
Mean	161.89	139.18	120.22	116.84		255.24		168.0	Mean	164.94	
Std. Dev.	60.08	44.75	46.33	46.64		61.35		75.7	Std Dev.	44.44	
	42	23	24	17	156	138	319			49	182
	45	38	38	26	163	148	320			70	183
	47	61	74	27	167	151	329			92	185
	64	78	87	31	169	162	340			102	187
	94	95	102	46	173	173	345			105	190
	103	100	104	47	179	173	352			115	191
	116	117	112	50	185	191	382			115	192
	148	123	129	64	206	199	446			118	192
	151	124	129	67	207	201				126	193
	153	125	132	69		203				130	195
	154	126	133	69		204				131	196
	164	127	135	73		207				132	197
	167	136	138	73		214				134	200
	173	137	141	78		217				135	202
	178	140	143	84		219				138	206
	179	140	145	86		221				140	212
	180	146	145	89		222				141	216
	194	146	152	99		226				142	218
	199	147	153	101		226				145	224
	200	148	158	107		228				148	228
	202	153	160	108		235				150	231
	205	153	162	109		236				150	377
	220	163	166	114		238				151	
	220	164	174	115		240				151	
	221	165	175	115		241				152	
	234	165	189	123		241				152	
	239	169	201	130		248				153	
	241	171	203	132		249				153	
	187	207	132			252				154	
	202	209	133			254				154	
	207	216	133			258				155	
	208		133			258				155	
	209		133			262				158	
			134			265				159	
			136			278				161	
			139			279				162	
			141			288				165	
			146			290				167	
			146			292				168	
			150			292				173	
			150			297				174	
			151			301				175	
			152			302				178	
			153			302				180	
			154			313				180	
			156			316				181	

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1994 101-90, West Behm Canal (cont.)						1994 102-20, Clarence Strait						
Transect #	9	15	15 (cont.)	16	Total	Transect #	1	1 (cont.)	2	2 (cont.)	10	Total
N	28	54		16	166	N	63		57		38	158
Mean	129.73	88.80		277.19	157.8	Mean	212.87		203.61		188.84	203.8
Std Div	46.82	21.47		74.72	71.8	Std Div	77.04		52.23		43.93	62.1
	117	28	108	240			45	251	52	246	108	
	126	31	111	259			49	261	87	248	111	
	141	60	111	225			86	266	104	254	123	
	144	62	116	325			98	266	118	256	137	
	157	63	117	327			99	269	124	260	139	
	169	64	119	268			104	274	145	262	145	
	169	64	125	375			106	286	152	269	149	
	171	66	135	324			108	288	158	279	153	
	182	67		286			114	292	158	304	165	
	186	69		315			114	296	161	305	166	
	193	69		403			128	303	161	317	172	
	194	71		354			136	308	164		172	
	203	72		153			143	324	167		173	
	203	76		184			145	327	174		176	
	204	76		160			147	331	174		177	
	205	77		237			154	349	176		177	
	215	80					160	434	179		177	
	228	80					170		179		178	
	230	80					174		186		183	
	230	81					174		187		187	
	231	82					180		190		189	
	232	82					182		192		190	
	256	82					182		192		191	
	257	83					183		196		200	
	258	84					208		197		201	
	264	85					210		197		201	
	275	93					213		198		205	
	307	93					223		200		206	
	95						225		200		207	
	96						229		203		210	
	96						231		204		212	
	98						232		206		228	
	100						233		207		228	
	100						233		212		237	
	101						234		218		240	
	101						234		219		263	
	102						234		221		274	
	102						237		231		326	
	103						237		236			
	104						238		237			
	104						238		237			
	104						238		239			
	105						239		240			
	107						243		242			
	107						246		242			
	108						250		244			

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1994 102-80, Ship Island Shore							1994 103-40-001				
Transect #	11 & 13	11 & 13 (cont.)	2	2 (cont.)	3	3 (cont.)	Total	Transect #	2	20	24
N	83		74		76		233	N	47	45	39
Mean	82.36		87.57		147.26		105.2	Mean	125.8	135.7	138.3
Std Div	38.53		40.52		72.36		60.0	Std Div	33.1	35.2	28.3
	21	82	29	97	17	172			30	67	89
	24	82	32	99	21	173			66	77	90
	27	82	32	99	31	178			69	80	91
	29	83	34	105	31	179			75	80	91
	32	84	34	106	32	180			77	86	101
	36	85	35	106	32	180			90	88	104
	40	85	38	111	36	185			92	90	105
	40	86	38	113	38	190			99	98	113
	43	87	39	115	58	191			100	104	118
	44	90	44	115	59	194			101	105	126
	45	91	46	117	65	195			101	107	127
	46	91	48	121	66	200			102	109	128
	46	92	48	122	66	204			103	112	129
	49	92	49	125	67	206			104	112	131
	49	93	49	127	78	210			111	118	131
	50	95	50	127	79	214			113	120	132
	53	96	54	127	87	218			121	121	133
	54	97	55	127	89	220			122	121	134
	58	99	55	141	97	221			123	129	134
	58	100	57	145	103	224			123	129	135
	59	105	57	145	106	225			124	133	136
	59	105	58	146	107	225			125	136	137
	59	106	58	148	109	227			125	138	141
	62	108	60	154	109	230			127	138	142
	64	109	61	167	113	233			128	140	143
	66	110	62	170	115	241			131	143	147
	67	119	63	173	121	249			132	153	153
	67	119	64	213	123	266			133	154	154
	67	120	72		126	351			134	155	154
	68	125	75		126	355			137	155	156
	69	131	76		130				139	159	160
	70	136	76		131				139	160	163
	70	138	77		132				145	161	163
	72	187	77		135				145	161	171
	72	203	77		135				145	164	171
	73	215	81		135				146	166	184
	74	223	81		138				147	167	190
	74		82		144				148	172	191
	75		82		145				156	173	196
	76		82		145				159	174	
	78		83		156				163	178	
	79		84		158				166	186	
	79		87		160				174	187	
	80		91		166				177	199	
	81		93		167				180	202	
	81		94		172				181		
									184		

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1994 103-40-001 (cont.)			1994 103-80, Nossuk Bay						
Transect #	25	Total	Transect #	10	11	14	14 (cont.)	15	Total
N	39	170	N	29	30	50		38	147
Mean	165.0	140.3	Mean	326.8	239.6	246.46		230.1	256.7
Std Div	44.2	38.0	Std Div	90.7	41.9	64.44		44.5	71.3
				160	151	99	359	120	
				175	175	133	361	121	
				220	181	138	385	168	
				221	193	152	397	173	
				240	199	159		186	
				243	200	159		188	
				246	204	181		191	
				277	206	183		192	
				277	217	192		198	
				280	224	195		209	
				281	227	197		211	
				281	233	199		212	
				296	235	202		213	
				303	237	203		214	
				311	238	206		219	
				317	238	210		221	
				332	244	213		223	
				348	246	219		226	
				361	249	227		231	
				369	249	232		232	
				384	256	238		240	
				411	257	242		246	
				419	258	244		247	
				426	265	250		248	
				429	278	251		248	
				445	283	251		251	
				466	287	253		254	
				471	307	257		259	
				488	321	257		261	
				330	260			262	
					260			267	
					262			271	
					262			271	
					267			273	
					268			280	
					271			285	
					284			302	
					285			330	
					286				
					291				
					303				
					303				
					305				
					312				
					325				
					335				

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1994 106-30, Snow Pass							1994 109-44,45,50 Saginaw/Security Bays						
Transect #	15	15	15	13	13	Total	Transect #	8	10	13	13	Total	
N	110	(cont.)	(cont.)	87	(cont.)	151	N	21	45	51	(cont.)	117	
Mean	262.22			206.95			Mean	292.8	249.8	271.96			
Std Div	52.71			36.68			Std Div	83.7	48.2	119.86			
145	256	317	136	206			108	119	80	438			
148	256	318	142	206			185	150	103	460			
166	261	318	150	207			189	177	130	492			
169	262	319	153	207			205	197	135	540			
171	263	321	154	208			222	197	136	632			
175	264	322	156	208			232	199	141				
184	265	323	158	209			248	206	156				
185	265	325	160	210			257	206	160				
188	267	326	163	211			272	207	162				
191	268	330	165	215			276	211	165				
196	268	333	165	216			315	213	172				
199	268	334	166	218			317	215	172				
203	268	341	167	220			335	216	174				
204	269	342	169	222			336	221	176				
205	269	362	170	223			347	224	182				
210	269	373	170	224			349	226	184				
210	272	378	172	224			362	233	187				
211	272	462	174	224			372	237	201				
211	273		178	228			379	241	226				
214	273		178	228			404	242	235				
214	274		179	230			439	243	237				
215	274		180	232				246	237				
217	275		181	235				250	239				
218	275		182	238				251	241				
219	277		183	239				254	245				
219	278		185	239				259	248				
221	281		186	239				265	250				
222	282		186	245				269	257				
223	282		186	245				270	265				
224	283		191	247				272	271				
227	283		191	252				277	273				
229	285		195	256				284	275				
229	288		195	256				285	294				
231	290		197	264				285	295				
232	291		198	265				286	298				
236	293		198	268				293	300				
239	294		199	278				297	302				
239	297		199	279				297	324				
240	297		201	292				299	350				
242	297		201	302				301	361				
245	301		201	307				302	391				
245	306		203					307	392				
248	312		205					329	395				
248	312		205					336	423				
254	312		205					348	432				
255	317		205						436				

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1994 112-11,21/Kelp Bay							1994 113-62.66/Peril Strait						
Transect #	6	6	8	11	12	Total	Transect #	28	28	26,8,14	26,8,14	Total	
N	53	(cont.)	36	30	47	166	N	91	(cont.)	87		178	
Mean	214.38		221.3	210.5	204.9	212.5	Mean	227.30		154.60		191.8	
Std Div	48.72		51.9	48.7	43.5	48.0	Std Div	53.46		61.19		67.8	
	68	261	125	139	85			104	224	30	162		
	89	279	134	143	152			119	228	33	162		
	122	285	142	145	154			122	229	44	164		
	131	292	143	155	157			144	230	46	165		
	149	293	143	165	160			150	234	65	166		
	151	297	152	166	162			153	238	65	169		
	164	312	158	169	164			153	239	68	170		
	174		161	170	164			159	240	69	177		
	175		177	182	166			163	240	70	177		
	185		190	186	168			166	242	78	183		
	185		200	190	172			167	243	79	187		
	187		211	193	173			169	243	81	187		
	187		213	195	175			175	244	85	191		
	187		215	197	177			176	245	86	191		
	187		221	200	178			176	250	88	191		
	188		222	202	178			179	253	93	194		
	189		225	210	185			181	255	94	196		
	204		227	214	186			185	256	102	197		
	204		233	220	188			186	257	103	198		
	209		233	220	189			187	259	104	199		
	211		234	221	190			187	259	106	204		
	212		240	230	190			189	261	106	209		
	216		241	240	191			190	261	115	209		
	218		242	242	196			191	262	115	209		
	220		245	256	199			193	267	115	214		
	221		247	268	202			193	268	116	217		
	223		252	272	204			194	269	116	219		
	225		256	289	210			194	274	121	219		
	226		261	296	216			195	274	121	224		
	227		263	339	217			196	274	124	226		
	227		271		218			196	275	128	228		
	231		281		219			198	277	128	230		
	231		286		232			198	287	130	234		
	231		289		234			199	293	130	235		
	232		293		236			203	296	133	238		
	232		342		238			206	298	138	244		
	236				242			207	300	138	247		
	238				244			211	310	139	252		
	238				245			212	311	144	260		
	239				248			213	322	149	268		
	239				249			213	330	149	322		
	240				256			214	330	149			
	240				263			217	344	152			
	245				270			218	352	155			
	250				286			223	354	155			
	260				297			223		161			
					303								

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Transect #	5&6	5&6	19	19	Total
N	82	(cont.)	73	(cont.)	155
Mean	182.48		194.34		188.1
Std Div	43.46		32.22		38.9
	45	192	104	201	
	64	194	137	201	
	80	195	139	203	
	82	195	143	204	
	90	196	144	205	
	91	196	151	209	
	92	198	153	209	
	112	199	158	210	
	130	199	158	214	
	135	201	159	214	
	138	201	160	215	
	145	206	164	217	
	145	208	164	218	
	145	209	166	221	
	154	210	169	223	
	161	212	169	223	
	164	212	171	226	
	164	214	176	232	
	164	216	177	234	
	166	217	178	234	
	166	218	180	238	
	167	221	180	238	
	167	224	181	242	
	168	224	182	250	
	169	224	182	264	
	172	225	183	267	
	173	227	183	288	
	177	228	184		
	178	234	184		
	178	234	187		
	179	235	188		
	180	236	188		
	180	240	188		
	181	253	189		
	185	254	195		
	185	257	195		
	185		195		
	186		195		
	187		196		
	189		197		
	189		197		
	189		199		
	190		199		
	190		200		
	190		200		
	192		200		

Appendix 9. Individual sea cucumber weights from assessment surveys, 1997.

101-10,11 6/13/1997							101-90,95 6/11/1997						
Transect #	14	16	18	20	22	Total	Transect #	8	9	15	16		
N	47	47	40	47	34	215	N	47	39	46	52		
Mean	201.5	147.2	151.7	134.7	342.8	188.11	Mean	106.0	126.9	60.1	144.1		
Std Div	55.6	46.5	54.6	39.4	64.7	87.93	Std Div	23.2	38.1	17.7	48.5		
236	58	174	140	375			106	110	51	201			
266	181	109	126	328			112	170	25	140			
207	159	120	177	356			78	114	44	148			
182	191	124	131	434			83	137	68	98			
235	189	242	136	367			131	153	67	164			
244	229	178	128	409			64	140	39	138			
183	67	171	189	273			85	111	86	38			
190	127	174	137	317			99	135	48	142			
196	183	132	103	387			69	149	64	148			
208	181	178	125	478			106	95	74	187			
322	183	127	199	434			160	119	74	244			
119	181	75	122	355			124	70	45	189			
193	168	182	165	361			108	141	78	61			
188	146	111	135	333			120	164	68	55			
203	201	93	205	326			60	81	48	84			
154	216	163	148	275			93	48	42	164			
150	141	163	139	264			133	187	63	187			
218	97	252	125	378			133	217	56	82			
207	117	199	128	350			59	146	51	181			
296	118	66	45	327			104	160	67	185			
202	80	168	145	346			93	77	53	192			
247	134	214	166	380			130	149	47	104			
228	101	151	123	285			107	130	87	164			
233	67	145	132	327			142	146	72	212			
282	196	74	108	355			112	160	79	194			
189	160	105	137	103			109	94	71	170			
175	157	124	139	314			102	123	68	142			
293	40	163	154	304			85	105	80	132			
177	187	174	148	328			87	127	94	151			
249	183	225	109	322			113	127	90	214			
177	147	96	147	444			103	91	55	144			
118	103	143	86	350			126	110	68	170			
189	116	252	80	324			131	97	36	94			
199	131	295	180	345			138	84	51	146			
166	161	140	153				101	197	58	140			
171	101	131	131				98	92	63	191			
166	91	49	124				108	168	80	126			
210	104	171	138				81	62	69	110			
158	211	92	209				119	164	63	223			
119	180	124	202				68		28	115			
370	170		111				126		73	117			
236	133		111				96		61	64			
198	218		30				108		57	103			
162	173		28				100		29	57			
104	194		178				143		58	86			
169	128		138				127		15	149			
86	119		122				104			126			

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101-90,95 (cont.)			102-20						
6/11/1997			6/14-6/15/97						
Transect #	16 (cont.)	Total	Transect #	1	2	4	5	10	Total
N		182	N	47	40	28	47	19	181
Mean		108.21	Mean	158.1	161.6	183.9	132.8	214.8	162.26
Std Div		46.65	Std Div	60.6	43.5	57.1	35.1	54.7	55.20
				281	249	278	101	174	
				167	143	183	139	231	
				205	191	177	156	205	
				134	61	161	94	165	
				149	73	214	205	146	
				249	194	217	115	236	
				194	214	127	34	201	
				210	162	96	128	211	
				208	152	149	127	213	
				186	176	238	103	154	
				185	239	191	101	218	
				160	95	162	150	268	
				206	213	202	157	313	
				170	168	227	155	269	
				106	189	207	168	319	
				146	134	242	135	209	
				71	174	185	145	98	
				152	113	267	164	218	
				259	171	267	202	234	
				88	79	196	129		
				232	181	165	140		
				151	152	195	132		
				134	189	176	150		
				114	144	140	129		
				304	130	69	130		
				90	129	29	109		
				117	160	172	145		
				102	208	217	165		
				86	183		87		
				143	132		149		
				106	150		120		
				155	182		108		
				210	208		121		
				112	177		64		
				85	167		75		
				116	128		103		
				82	164		170		
				270	100		157		
				100	168		115		
				208	223		73		
				86			152		
				90			139		
				134			178		
				168			147		
				122			194		
				262			119		
				127			162		

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102-80 6/10/1997								103-40-001 6/16/1997				
Transect #	2	2	3	11	12	13	13	Total	Transect #	1	2	20
N	53		24	46	47	51		221	N	38	47	41
Mean	116.30		146.4	73.7	95.5	149.06		113.82	Mean	162.8	116.7	132.1
Std Div	54.32		57.3	41.8	37.7	40.55		53.70	Std Div	55.4	27.9	56.4
	127	82	116	67	129	176	141		176	132	183	
	175	148	115	20	144	189	89		216	137	139	
	126	113	150	33	117	91	238		109	135	244	
	142	86	354	78	80	200	123		200	101	258	
	181	126	148	164	84	210			206	100	160	
	43	100	154	53	149	170			201	141	141	
	203		162	80	87	153			192	154	111	
	119		136	56	75	159			230	145	156	
	132		126	119	159	187			182	127	34	
	116		142	67	92	226			136	115	54	
	102		181	75	87	95			122	134	62	
	109		43	66	110	190			149	81	141	
	202		203	36	67	204			161	140	171	
	162		132	143	136	115			163	130	138	
	163		102	58	91	143			147	119	35	
	154		109	50	145	154			33	163	58	
	149		202	80	107	176			105	52	151	
	42		184	79	105	218			156	142	142	
	86		163	171	71	138			226	128	64	
	43		127	68	124	155			55	137	110	
	102		149	112	149	166			171	100	152	
	75		119	69	130	177			161	150	174	
	65		111	170	71	84			117	135	225	
	44		85	156	139	74			295	103	170	
	69			55	38	157			169	125	34	
	145			78	104	195			173	138	125	
	87			105	96	124			140	70	126	
	86			62	132	115			226	70	168	
	184			71	89	144			65	89	167	
	136			22	107	139			167	71	144	
	99			40	136	109			231	77	154	
	111			6	20	163			155	135	134	
	85			31	36	85			184	114	161	
	115			49	39	114			59	163	54	
	150			53	55	123			199	133	130	
	354			107	19	113			239	85	82	
	148			131	47	131			142	98	143	
	123			49	97	151			129	98	124	
	120			105	56	92			101	161		
	144			64	83	144			134	30		
	64			20	103	195			85	206		
	105			93	88	143				113		
	45			30	50	207				147		
	30			53	73	116				127		
	47			86	161	148				74		
	123			8	141	116				145		
	77				69	137				91		

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103-40-001(cont.) 6/16/1997			103-80 6/17-6/18/97							
Transect #	24	25	Total	Transect #	3	10	11	14	15	Total
N	47	29	202	N	27	25	36	27	25	140
Mean	130.9	235.9	148.90	Mean	210.4	312.4	255.0	204.6	257.4	247.36
Std Div	35.7	49.9	59.32	Std Div	45.7	108.8	36.5	30.9	71.6	72.47
	149	390			205	275	214	227	269	
	147	167			96	319	230	222	236	
	98	197			188	429	241	206	230	
	239	174			250	203	242	169	263	
	117	287			290	336	218	191	208	
	119	176			194	467	212	283	196	
	96	231			155	303	333	263	300	
	133	221			241	252	245	177	355	
	124	185			163	477	181	221	308	
	137	255			209	157	265	169	246	
	142	252			219	432	331	199	204	
	120	233			221	489	269	203	209	
	128	196			203	29	234	166	219	
	113	250			202	289	220	179	200	
	211	238			205	239	213	199	260	
	63	215			230	227	239	223	471	
	139	200			291	253	260	221	228	
	55	245			229	219	284	200	314	
	98	247			254	307	286	156	197	
	135	141			156	352	294	242	377	
	129	223			210	321	253	190	161	
	134	305			158	326	281	201	294	
	148	236			280	407	278	209	148	
	157	273			264	271	242	199	293	
	120	242			152	431	266	205	248	
	107	264			211		276	158		
	136	268			205		225	246		
	159	308					199			
	128	221					266			
	144						247			
	113						319			
	153						314			
	110						243			
	177						223			
	204						288			
	109						250			
	116									
	139									
	107									
	176									
	184									
	110									
	67									
	103									
	141									
	84									
	133									

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106-30 7/8/1997							110-21,22,24 7/10/1997				
Transect #	3	4	4	5	6	13	Total	Transect #	2	3	4
N	34	52		45	10	35	177	N	21	7	4
Mean	148.5	103.52		146.22	217.90	221.31	153.15	Mean	212.0	172.1	296.8
Std Div	51.5	39.61		32.09	82.41	54.43	63.53	Std Div	51.3	67.2	20.6
158	46	124	158	212	290			198	161	273	
84	115	60	86	371	310			240	157	293	
133	51	67	133	186	185			194	226	298	
173	40	120	153	247	248			167	37	323	
164	81	57	188	292	181			36	227		
193	67		169	89	314			230	223		
150	87		169	283	48			280	174		
177	59		147	175	248			222			
175	18		160	188	298			198			
168	149		199	136	180			281			
116	79		148		239			206			
149	94		193		248			254			
158	125		101		197			253			
162	75		137		252			186			
139	147		173		245			223			
74	134		173		220			200			
202	151		157		221			181			
256	91		152		213			258			
147	144		110		242			196			
55	152		131		292			237			
131	93		156		138			211			
220	102		135		217						
134	115		144		102						
218	154		128		202						
206	126		140		252						
107	81		133		229						
177	125		69		216						
55	177		156		205						
30	113		137		155						
124	127		172		213						
205	119		183		198						
106	25		174		239						
192	103		46		233						
110	153		183		233						
	35		131		243						
	73		167								
	98		155								
	39		165								
	111		150								
	118		75								
	120		147								
	144		154								
	152		134								
	158		139								
	148		170								
	120		171								
	121										

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110-21,22,24 (cont.)							112-11,21					
7/10/1997							7/11/1997					
Transect #	6	10	12	14	15	unknown	Total	Transect #	2	4	9	11
N	7	9	28	5	34	25	140	N	18	27	40	38
Mean	267.3	274.1	262.0	204.8	255.6	317.96	245.48	Mean	238.7	234.4	208.5	200.4
Std Div	86.1	35.5	77.8	49.0	42.2	65.91	64.15	Std Div	119.4	56.3	56.0	41.4
	331	246	277	254	221	271			268	289	199	174
	94	287	260	261	235	381			256	196	295	183
	352	212	249	155	205	287			358	307	156	219
	310	278	252	179	237	466			272	211	236	160
	235	249	216	175	279	342			54	226	274	191
	264	329	275		247	158			378	247	264	235
285	274	318		292	313			434	223	228	226	
	278	216		280	342			175	274	283	185	
	314	317		282	214			348	168	206	128	
	328		294		325			31	375	162	187	
	316		357		387			249	244	219	339	
	293		226		366			220	219	307	201	
	205		177		305			24	211	172	191	
	268		252		380			281	194	203	181	
	243		327		263			188	323	180	230	
	395		263		336			332	201	225	183	
	260		277		320			298	269	55	91	
	338		272		312			130	210	174	221	
	201		323		330				186	196	198	
	213		219		347				224	276	204	
	16		268		241				356	149	178	
	320		239		327				201	226	170	
	199		275		210				177	227	246	
	227		215		377				242	181	230	
	385		321		349				212	217	175	
	297		224						209	204	140	
	119		235						135	175	212	
	332		299							162	160	
			194							250	193	
			200							314	197	
			262							136	190	
			243							279	204	
			198							211	227	
			252							191	247	
										284	273	
										176	206	
										225	216	
										111	223	
										141		
										172		

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112-11,21(cont.)			112-41,42									
7/11/1997			7/12/1997									
Transect #	12	14	Total	Transect #	2	6	8	10	12	12	14	Total
N	24	29	176	N	39	38	12	47	73	28	237	
Mean	169.2	214.8	209.48	Mean	159.8	158.9	266.9	145.8	174.04	217.3	173.50	
Std Div	30.1	66.6	64.61	Std Div	51.0	26.0	45.1	36.3	39.83	54.8	50.93	
	173	165			238	133	313	137	183	216	200	
	233	188			137	135	278	133	173	172	151	
	104	243			152	160	302	166	177	164	260	
	181	279			192	147	217	166	160	182	350	
	133	84			174	163	269	182	148	192	150	
	160	262			71	156	250	127	131	238	143	
	160	277			48	144	247	139	127	198	186	
	223	163			124	172	242	154	215	125	220	
	172	135			193	164	268	131	172	156	206	
	173	122			162	163	305	99	236	142	317	
	176	254			107	154	174	268	119	119	216	
	114	190			165	176	338	149	142	148	272	
	186	300			148	86		143	156	180	215	
	170	139			147	190		106	125	215	222	
	187	195			191	141		132	198	160	244	
	131	215			28	172		146	238	115	194	
	206	297			169	148		136	192	151	148	
	152	321			211	158		146	182	236	297	
	176	257			216	165		165	164	128	222	
	162	185			106	137		94	187	259	209	
	161	108			175	131		112	216	131	160	
	200	254			108	157		136	115	127	224	
	162	230			194	168		132	259	160	205	
	165	237			216	121		220	239	173	305	
	150				58	162		129	180	166	232	
	130				118	112		141	160	183	147	
	282				202	171		146	151	156		
	284				160	155		182	259		234	
	282				212	166		127	93			
					203	151		139	180			
					178	208		154	133			
					190	195		131	145			
					190	180		99	206			
					130	178		129	196			
					237	177		268	166			
					196	161		137	145			
					145	234		149	128			
					145	147		143	158			
					198			106	187			
								132	259			
								220	158			
								146	180			
								141	239			
								136	145			
								132	206			
								136	196			
								112	145			

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112-43,44,45,46,47,48 7/12-7/13/97							133-62,63,64,65,66 7/15/1997				
Transect #	2	5	6	7	10	Total	Transect #	8	14	25	25
N	30	38	31	27	24	150	N	32	4	51	
Mean	211.7	178.1	209.6	175.0	273.6	206.04	Mean	227.2	272.3	140.8	
Std Div	45.3	28.2	38.9	53.3	51.7	54.12	Std Div	42.7	59.3	39.7	
219	194	167	226	207			147	284	139	104	
181	153	153	131	248			217	267	141	145	
201	156	294	183	254			163	341	110	151	
133	130	264	176	261			258	197	175		
252	179	293	184	350			225		95		
114	181	224	173	356			331		133		
200	173	180	177	196			192		130		
251	172	240	98	199			233		165		
219	166	228	91	218			219		103		
250	144	224	158	334			229		136		
310	147	203	86	275			240		186		
179	154	158	113	302			263		160		
231	198	252	205	265			174		200		
228	167	183	189	249			220		198		
189	220	162	234	234			170		110		
272	218	226	292	286			248		145		
210	164	176	213	368			291		174		
230	196	180	179	351			326		200		
108	197	191	249	295			206		177		
178	154	254	248	270			218		93		
163	186	240	222	245			211		102		
263	222	186	170	320			238		159		
214	224	198	186	216			189		150		
243	149	231	174	268			216		127		
178	135	190	81				182		145		
233	170	190	132				247		119		
220	217	244	154				280		150		
195	163	148					203		168		
255	176	191					213		148		
231	149	197					252		224		
	200	230					263		108		
	206						205		171		
	160								210		
	198								136		
	150								220		
	241								132		
	154								92		
	205								28		
									109		
									156		
									120		
									167		
									165		
									126		
									120		
									86		
									60		
									111		

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133-62,63,64,65,66 (cont.)			
7/15/1997	26	28	Total
Transect #	26	28	Total
N	45	37	168
Mean	149.9	204.9	177.11
Std Div	46.0	42.1	57.07
	212	200	
	187	173	
	149	258	
	125	316	
	121	212	
	205	191	
	134	197	
	129	167	
	137	247	
	131	239	
	115	181	
	25	150	
	226	185	
	120	191	
	149	186	
	207	237	
	146	237	
	167	181	
	183	203	
	220	144	
	148	232	
	116	107	
	137	203	
	105	186	
	235	193	
	199	226	
	107	218	
	139	190	
	144	290	
	158	144	
	211	194	
	179	217	
	140	176	
	180	196	
	210	233	
	135	290	
	98	192	
	83		
	105		
	52		
	170		
	188		
	154		
	173		
	92		

Appendix 10. Individual sea cucumber weights from assessment surveys, 2000.

101-10,11 7/26-7/27/00												
Transect #	1	3	5	7	9	11	13	14	15	16	18	19
N	17	14	14	14	12	14	13	28	13	35	29	16
Mean	259.41	205.64	355.07	295.14	296.17	227.14	144.38	196.86	210.08	131.71	172.83	119.25
Std Div	46.00	50.63	93.18	76.56	98.27	51.20	79.47	65.89	67.47	42.62	53.68	42.57
	264	166	339	359	228	260	168	154	283	157	186	58
	163	254	359	240	274	263	185	225	253	168	171	108
	259	142	511	430	288	241	299	186	223	141	336	112
	180	108	356	236	243	185	167	242	240	158	135	87
	325	281	409	330	162	270	75	120	111	136	217	156
	318	217	368	261	357	270	124	240	297	122	114	122
	254	185	171	192	409	110	85	227	159	104	147	137
	273	266	410	294	336	310	271	229	134	93	239	117
	306	221	365	154	527	210	189	250	107	70	126	185
	201	185	422	289	242	230	25	265	243	196	152	101
	229	201	356	366	228	212	88	191	171	186	151	215
	242	243	287	357	260	233	77	124	214	208	144	119
	283	161	441	262		229	124	292	296	195	175	41
	293	249	177	362		157		69		111	166	106
	254							168		110	69	108
	265							242		134	110	136
	301							180		130	262	
								152		118	150	
								201		220	164	
								377		101	140	
								226		99	140	
								179		151	192	
								241		105	235	
								85		95	195	
								112		64	170	
								184		191	197	
								214		138	129	
								137		152	244	
									115		156	
									107			
									73			
									144			
									35			
									143			
									140			

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101-10,11 (cont.)						101-25						
7/26-7/27/00						6/27-7/8/00						
Transect #	20	21	22	23	Total	Transect #	1	3	5	7	9	11
N	32	11	29	16	291	N	15	16	16	14	16	14
Mean	152.94	197.91	333.48	311.44	216.62	Mean	154.53	224.63	239.00	229.64	259.06	279.00
Std Div	50.10	70.02	75.14	91.61	97.39	Std Div	36.94	47.93	54.42	51.22	58.81	57.18
	172	194	188	458			157	268	170	213	230	348
	154	227	374	337			83	140	203	173	217	320
	186	289	288	293			127	220	322	107	322	320
	137	256	319	300			150	292	300	306	351	360
	132	182	354	390			234	153	169	274	298	192
	184	296	353	188			130	245	252	268	307	203
	52	123	313	244			149	165	254	197	281	222
	195	165	367	190			190	210	282	223	189	260
	194	66	488	181			131	237	171	206	232	278
	215	224	219	406			161	205	244	274	270	311
	161	155	276	385			127	244	332	281	258	326
	205	279	286				169	243	194	234	210	253
	253	367	294				155	274	252	227	365	311
	173	225	331				143	302	190	232	222	202
	198	245	234				212	213	208		241	
	137	412	466				183	281			152	
	162	323										
	154	364										
	182	278										
	30	310										
	175	341										
	92	284										
	88	431										
	122	439										
	168	448										
	83	344										
	153	301										
	162	282										
	60	459										
	176											
	143											
	196											

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101-25 (cont.) 6/27-7/8/00						101-30 7/24-7/25/00					
Transect #	21	23	25	26	Total	Transect #	1	2	3	5	7
N	15	16	14	13	139	N	12	16	17	2	17
Mean	241.73	288.00	174.21	252.62	234.62	Mean	248.25	149.00	147.41	328.00	132.65
Std Div	70.98	56.20	51.48	28.08	65.01	Std Div	40.27	30.89	41.56	108.89	48.04
	192	335	222	274			270	165	127	251	180
	222	242	37	224			224	122	188	405	167
	149	248	194	247			193	162	147		151
	236	319	101	250			264	183	159		98
	320	281	182	285			231	160	166		89
	249	309	181	279			249	114	171		34
	314	162	187	277			275	114	200		181
	232	213	234	206			188	119	190		96
	295	292	157	253			283	221	130		115
	300	282	172	241			283	158	212		164
	240	248	214	289			315	132	119		125
	226	298	200	253			204	100	80		66
	329	366	155	206				156	136		181
	60	331	203					152	155		173
	262	301						171	59		204
		381						155	163		91
									104		140

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101-30 (cont.) 7/24-7/25/00						101-90,95 6/23-6/24/00					
Transect #	9	11	13	15	Total	Transect #	3	4	5	7	8
N	13	14	16	13	111	N	17	33	12	12	29
Mean	79.08	115.50	143.19	131.46	145.21	Mean	219.00	85.42	103.92	111.42	189.76
Std Div	36.73	38.69	30.74	31.22	60.74	Std Div	47.50	25.39	38.89	36.48	54.29
64	146	137	145			188	65	57	121	279	
100	125	152	131			113	111	138	112	148	
62	85	187	119			198	51	154	121	244	
88	134	162	161			226	85	110	91	126	
120	177	109	130			209	54	84	206	184	
83	89	170	121			191	52	111	99	173	
56	48	140	61			278	98	109	86	173	
35	116	170	143			184	59	49	114	220	
14	50	148	138			179	83	160	138	235	
67	121	132	185			241	52	96	81	212	
150	160	135	150			228	126	47	108	167	
71	147	119	87			325	109	132	60	243	
118	90	76	138			217	98			184	
	129	176				200	70			155	
		176				221	102			210	
		102				274	69			122	
						251	96			203	
							104			159	
							105			126	
							96			161	
							94			225	
							40			40	
							25			211	
							86			235	
							100			315	
							82			217	
							70			138	
							127			218	
							118			180	
							79				
							107				
							107				
							99				

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101-90,95 (cont.) 6/23-6/24/00											
Transect #	9	11	13	15	16	17	19	21	23	25	Total
N	12	13	12	31	31	13	16	12	12	12	252
Mean	209.00	109.38	126.08	58.45	247.87	87.46	106.31	158.08	102.83	139.67	139.37
Std Div	82.11	52.99	51.97	31.21	66.22	43.18	36.43	34.42	46.71	71.47	78.02
	309	92	146	73	197	55	143	164	86	110	
	248	86	189	7	298	43	164	140	42	236	
	226	205	97	26	191	101	108	165	119	196	
	141	64	212	30	288	14	143	150	158	136	
	153	62	94	31	120	98	102	155	44	111	
	119	155	57	72	218	57	72	128	99	294	
	290	91	38	58	244	163	110	166	50	85	
	315	101	105	28	191	91	55	215	63	61	
	207	206	128	41	151	51	66	184	146	62	
	231	48	117	67	327	124	109	211	114	109	
	227	87	167	27	210	135	82	101	133	106	
	42	72	163	91	328	131	172	118	180	170	
		153		88	157	74	101				
				81	176		125				
				74	284		98				
				116	268		51				
				77	316						
				71	345						
				98	250						
				75	220						
				17	341						
				11	368						
				22	198						
				96	224						
				48	171						
				100	274						
				77	227						
				95	245						
				22	204						
				23	318						
				70	335						

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102-20 7/22-7/23/00											
Transect #	1	2	3	5	7	9	10	11	13	15	Total
N	38	30	10	36	15	18	34	14	15	13	213
Mean	178.05	165.27	121.50	149.06	167.27	260.11	227.00	143.93	170.40	157.69	178.63
Std Div	67.56	66.64	36.66	34.22	34.86	35.78	91.70	56.54	47.45	80.14	70.75
	214	141	88	115	182	236	358	151	167	56	
	61	241	94	180	172	238	251	179	164	201	
	173	94	160	237	156	258	214	75	170	180	
	136	133	163	112	150	293	269	271	210	122	
	25	27	60	124	158	267	175	99	257	332	
	155	86	146	125	223	319	203	127	148	173	
	76	167	84	170	144	302	110	171	101	173	
	109	201	140	191	127	273	285	114	116	22	
	137	193	130	96	92	260	321	94	174	90	
	51	189	150	185	211	196	103	155	179	202	
	224	186		160	162	198	364	50	195	234	
	220	362		157	216	227	255	167	200	123	
	194	125		145	162	217	240	200	244	142	
	154	241		141	197	261	183	162	92		
	187	103		179	157	270	319		139		
	200	177		175		271	296				
	208	252		110		307	284				
	180	135		133		289	293				
	185	253		110			175				
	189	162		199			71				
	230	153		97			390				
	190	120		114			201				
	80	92		100			227				
	172	121		130			145				
	237	201		160			144				
	152	230		183			265				
	262	120		180			200				
	294	200		129			346				
	200	141		192			50				
	157	112		104			279				
	217			161			166				
	151			141			175				
	324			160			36				
	120			177			325				
	316			159							
	192			135							
	241										
	153										

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Transect #	1	2	3	7	9	11	12	13	Total
N	12	37	34	14	13	19	32	36	189
Mean	94.75	96.78	180.85	76.79	113.38	69.95	110.84	148.19	119.93
Std Div	40.17	47.33	49.01	30.73	31.15	38.80	31.55	51.85	55.91
	64	140	154	17	79	47	143	132	
	126	80	156	73	80	77	132	142	
	38	124	178	93	136	71	111	105	
	66	130	199	62	139	114	93	101	
	96	133	170	91	122	29	57	80	
	132	169	282	48	155	144	130	198	
	172	140	178	65	119	92	142	121	
	117	24	219	123	161	39	165	263	
	71	171	147	106	98	15	87	150	
	40	20	157	87	110	37	112	140	
	112	44	200	71	55	34	119	145	
	103	177	219	48	96	73	128	124	
	155	157	61	124		89	128	103	
	160	181	130			40	49	171	
	134	232				97	103	244	
	66	100				158	137	222	
	62	140				58	100	163	
	44	248				44	116	70	
	109	183				71	166	203	
	38	67					115	218	
	139	260					66	152	
	67	190					128	177	
	122	214					83	123	
	88	195					134	136	
	162	163					110	167	
	89	218					34	189	
	60	231					75	163	
	109	114					96	225	
	44	217					116	151	
	27	77					115	124	
	112	161					153	164	
	106	193					104	66	
	69	221						89	
	71	128						48	
	51							184	
	33							82	
	112								

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103-21,30 7/21-7/22/99 & 8/25-8/28/00											
Transect #	3	5	7	9	11	13	17	19	21	23	Total
N	15	23	15	16	15	26	17	12	13	16	158
Mean	218.67	261.78	155.60	265.56	491.47	281.85	135.29	247.33	322.23	242.88	261.47
Std Div	65.14	85.06	41.08	63.96	126.96	98.51	21.42	76.23	81.28	50.21	117.02
	328	213	146	228	432	473	143	114	447	267	
	229	163	176	254	458	289	136	278	251	183	
	137	214	113	224	325	432	123	173	398	252	
	197	205	160	324	633	296	129	164	327	202	
	192	365	120	231	399	294	143	169	272	242	
	121	277	189	357	658	136	160	276	382	209	
	256	240	185	260	793	241	140	305	238	197	
	282	298	119	303	421	295	148	275	336	364	
	102	68	139	420	624	361	151	285	361	202	
	263	260	209	233	437	304	138	358	219	283	
	262	400	120	285	414	159	165	336	208	230	
	269	233	216	200	456	414	78	235	441	237	
	162	495	123	200	403	406	135		309	232	
	255	235	98	225	501	234	116			196	
	225	282	221	315	418	246	132			258	
	200			190		347	105			332	
	256					333	158				
	310					230					
	195					107					
	260					238					
	235					304					
	300					159					
	317					414					
						129					
						256					
						231					

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103-80 6/5/2000								106-30 6/20-6/21/00			
Transect #	1	3	5	7	9	10	11	Total	Transect #	1	3
N	34	14	14	19	14	31	38	157	N	12	41
Mean	285.21	182.29	300.86	176.16	290.29	345.94	234.76	265.35	Mean	284.75	108.46
Std Div	102.18	39.86	47.49	54.95	67.71	69.30	53.68	88.74	Std Div	58.84	48.20
363	169	281	168	416	306	167			300	223	
222	184	361	297	353	353	233			245	76	
309	193	323	233	314	485	255			348	65	
370	199	329	184	327	406	109			414	76	
384	208	211	105	309	341	249			299	158	
318	258	261	113	176	241	243			201	40	
362	189	320	158	244	342	200			275	69	
296	191	350	94	257	410	264			220	44	
333	159	264	212	351	436	251			330	135	
271	230	291	194	230	329	264			269	56	
342	85	227	153	294	269	209			271	121	
370	170	347	173	178	398	261			245	112	
308	159	296	280	327	354	265				114	
263	158	351	142	288	383	128				76	
347		202			315	399				160	
388		167			273	252				81	
351		134			497	263				21	
436		127			322	348				107	
176		211			338	209				84	
168					341	162				51	
297					289	236				194	
233					402	285				123	
184					498	210				81	
105					298	212				94	
113					269	251				86	
244					296	215				113	
158					379	247				37	
257					287	230				165	
94					321	243				125	
351					267	214				118	
230					279	129				72	
294						224				132	
189						247				102	
571						253				153	
						283				76	
						210				199	
						279				133	
						222				90	
										175	
										192	
										118	

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106-30 (cont.) 6/20-6/21/00							109-30 9/6-9/7/00					
Transect #	4	5	7	9	11	13	Total	Transect #	3	5	9	11
N	35	36	13	15	16	26	175	N	18	17	16	11
Mean	108.06	176.75	166.85	164.73	204.50	197.42	151.85	Mean	272.78	201.59	269.88	219.27
Std Div	37.43	33.82	53.14	35.11	74.75	69.02	62.41	Std Div	63.44	42.01	63.96	57.81
	87	112	192	239	229	255			148	210	201	172
	137	149	111	148	373	240			228	173	347	160
	60	118	75	199	215	231			262	114	338	300
	109	187	167	173	204	212			344	157	230	131
	68	180	270	132	107	210			265	270	324	279
	119	215	150	123	147	127			410	253	230	228
	151	163	151	206	261	237			299	234	402	172
	65	173	243	158	139	220			347	204	316	290
	118	235	151	150	298	221			333	242	277	208
	143	208	112	187	293	128			254	140	317	266
	63	170	193	129	183	243			205	212	193	206
	84	134	160	148	117	18			246	238	221	
	189	230	194	114	163	197			318	186	184	
	82	177		192	231	124			273	227	239	
	138	90		173	192	177			213	208	267	
	150	209			120	177			203	163	232	
	47	160				213			263	196		
	48	176				191			299			
	161	150				257						
	118	186				190						
	140	159				287						
	87	209				20						
	79	168				224						
	76	151				218						
	126	175				196						
	118	185				320						
	72	186										
	143	204										
	128	211										
	120	208										
	60	182										
	175	127										
	82	175										
	116	225										
	123	167										
		209										

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109-30 (cont. 9/6/97/00)				112-11,21 5/8/2000							
Transect #	13	15	Total	Transect #	1	5	6	7	9	11	12
N	12	18	86	N	11	14	37	14	37	33	36
Mean	199.67	209.89	230.88	Mean	197.64	202.07	167.68	155.86	198.35	190.33	173.08
Std Div	89.39	65.86	69.90	Std Div	45.49	52.28	42.14	28.61	59.66	52.04	42.06
	268	206			219	195	263	109	133	186	258
	144	211			211	168	117	156	158	219	198
	263	268			120	221	156	142	253	212	144
	215	211			281	132	161	145	206	202	143
	241	53			239	237	175	208	198	83	210
	291	165			172	214	180	173	273	78	132
	347	251			185	167	171	190	269	176	216
	108	228			240	271	190	136	243	176	168
	154	224			178	275	143	177	140	175	204
	109	207			174	116	192	134	233	160	147
	41	136			155	232	122	154	198	179	165
	215	190			273	228	174	317	85	182	
	332				173	211	173	236	186	195	
	192				155	232	111	194	208	112	
	289					175		185	222	187	
	301					181		169	203	240	
	168					187		212	231	164	
	146					139		254	164	164	
						75		218	200	179	
						180		216	186	224	
						163		86	99	223	
						141		208	337	214	
						182		164	218	144	
						203		108	204	143	
						230		120	189	118	
						110		285	241	146	
						181		14	202	174	
						152		210	191	138	
						178		236	216	68	
						85		144	230	255	
						212		192	184	166	
						175		194	161	177	
						171		209	278	140	
						112		174		144	
						139		264		215	
						194		243		134	
						98		183			

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112-11,21 36654			112-41,42 5/4-5/8/00								
Transect #	15	Total	Transect #	1	2	3	5	6	9	10	11
N	12	186	N	14	30	12	13	30	12	36	12
Mean	137.33	179.84	Mean	131.86	131.43	211.25	129.77	160.10	138.00	157.97	120.83
Std Div	49.74	50.81	Std Div	34.13	34.64	60.84	42.90	26.31	25.22	39.61	30.93
	160		108	144	217	121	140	140	160	113	
	104		119	189	92	110	151	154	109	132	
	165		109	118	193	129	176	117	153	60	
	190		171	163	182	164	155	163	160	174	
	188		166	170	190	171	165	153	178	103	
	30		108	118	170	132	175	178	186	119	
	153		53	106	346	138	119	143	149	96	
	155		157	139	227	133	140	105	153	108	
	86		175	105	211	19	106	119	117	159	
	182		167	117	231	142	188	102	132	142	
	86		119	170	200	204	171	164	162	142	
	149		149	116	276	105	218	118	155	102	
			118	129		119	217		120		
			127	104			150		131		
				114			151		196		
				154			183		95		
				125			151		138		
				134			197		121		
				131			151		149		
				109			181		172		
				142			173		153		
				110			184		143		
				69			144		187		
				209			123		194		
				119			154		130		
				114			148		305		
				134			153		127		
				199			168		231		
				146			136		119		
				46			135		170		
									140		
									124		
									206		
									202		
									141		
									179		

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112-41,42 (cont.) 5/4-5/8/00				112-43,44,45,46,47,48 5/6-5/5/2000								
Transect #	12	13	15	Total	Transect #	1	2	3	5	6	7	11
N	32	13	15	208	N	13	12	15	47	35	28	16
Mean	146.97	194.85	232.20	156.74	Mean	206.00	196.92	170.27	177.60	218.17	177.00	258.50
Std Div	26.69	48.95	81.53	50.21	Std Div	26.82	63.05	41.01	35.10	40.82	33.39	26.51
180	146	254			236	159	216	170	222	211	247	
133	178	286			252	197	123	166	255	200	204	
138	165	251			201	303	134	280	235	158	266	
220	165	339			148	230	155	205	272	191	280	
111	288	68			198	179	95	181	239	94	258	
175	222	258			202	266	170	193	216	202	246	
155	218	290			181	187	208	226	184	152	250	
148	199	196			220	221	229	246	177	162	278	
124	238	302			217	178	226	207	220	151	227	
150	155	139			177	52	198	135	141	166	293	
159	112	292			223	233	185	166	232	158	234	
171	189	264			214	158	168	172	265	154	239	
127	258	67			209		128	220	223	180	287	
164		230					137	169	167	176	270	
109		247					182	179	245	160	305	
125							182	200	207	252		
176							196	219	128			
151							208	224	182			
146							150	260	194			
140							198	310	236			
154							160	129	188			
109							177	169	191			
140							160	146	165			
100							191	192	177			
158							185	246	273			
142							134	218	150			
157							122	207	175			
166							192	253	175			
106							115	227				
141							174	162				
194							141	273				
134							201	224				
							170	218				
							200	260				
							223	206				
							158					
							137					
							134					
							180					
							176					
							86					
							184					
							193					
							148					
							160					
							170					
							227					
							193					
							167					
							181					
							169					

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112-43,44,45,46,47,48 (cont.)			133-62,63,64,65,66									
5/6-5/2000			6/1/2000									
Transect #	13	15	Total	Transect #	8	9	11	21	23	25	26	28
N	11	15	183	N	34	6	12	15	12	31	8	20
Mean	285.09	207.80	202.67	Mean	175.00	179.00	296.42	286.33	214.92	142.81	152.13	194.10
Std Div	44.45	38.91	49.40	Std Div	30.97	34.37	41.69	71.59	36.60	35.58	67.84	50.56
	296	235			179	186	274	302	293	152	256	226
	298	245			170	193	345	303	251	168	200	337
	282	183			115	216	279	291	193	171	111	178
	295	170			212	169	305	332	199	151	112	163
	198	227			175	194	243	315	205	84	227	194
	268	227			170	116	318	255	224	35	140	165
	307	201			196	239	481	254	179	110	175	
	261	273			158	341	307	182	141	61	294	
	348	180			214	305	231	196	151		201	
	235	270			169	257	152	206	149		179	
	348	230			163	281	288	219	183		184	
	174				174	370	231	157	166		175	
	188				222		275		125		158	
	148				150		222		150		145	
	166				157		310		151		248	
					174				126		211	
					185				146		171	
					186				113		156	
					169				154		199	
					170				180		123	
					172				135			
					144				135			
					185				205			
					215				48			
					192				134			
					83				160			
					190				121			
					215				146			
					185				160			
					166				165			
					100				143			
					196							
					195							
					204							

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133-62,63,64,65,66 (cont.)		
6/1/2000		
Transect #	29	Total
N	11	140
Mean	154.36	192.48
Std Div	45.06	67.14
	197	
	126	
	194	
	85	
	105	
	119	
	136	
	189	
	187	
	223	
	137	

Appendix 11. Sea cucumber fishery opening/closures for the 1991, 1994, 1997, and 2000 rotation fisheries.

91/92	Season	Sea	Cucumber					
Stat. Area(s)	Opening Date/Time	Closing Date/Time	Stat. Wk.	Stat Area(s)	Opening Date/Time	Closing Date/Time	Stat Wk.	
101-10,11	10/26/91 12:01 AM	10/27/91 11:59 PM	43,44	103-40	11/23/91 12:01 AM	11/24/91 11:59 PM	47,48	
101-10,11	10/30/91 12:01 AM	10/31/91 11:59 PM	44	103-40	11/27/91 12:01 AM	11/28/91 11:59 PM	48	
101-10,11	11/2/91 12:01 AM	11/3/91 11:59 PM	44,45	103-40	11/30/91 12:01 AM	12/1/91 11:59 PM	48,49	
101-10,11	11/6/91 12:01 AM	11/7/91 11:59 PM	45	103-40	12/4/91 12:01 AM	12/5/91 11:59 PM	49	
101-90,95	10/2/91 12:01 AM	10/3/91 11:59 PM	40	103-40	12/7/91 12:01 AM	12/8/91 11:59 PM	49,50	
101-90,95	10/5/91 12:01 AM	10/6/91 11:59 PM	40,41	103-80	10/2/91 12:01 AM	10/3/91 11:59 PM	40	
101-90,95	10/9/91 12:01 AM	10/10/91 11:59 PM	41	103-80	10/5/91 12:01 AM	10/6/91 11:59 PM	40,41	
101-90,95	10/12/91 12:01 AM	10/13/91 11:59 PM	41,42	103-80	10/9/91 12:01 AM	10/10/91 11:59 PM	41	
101-90,95	10/16/91 12:01 AM	10/17/91 11:59 PM	42	103-80	10/12/91 12:01 AM	10/13/91 11:59 PM	41,42	
101-90,95	10/19/91 12:01 AM	10/20/91 11:59 PM	42,43	103-80	10/16/91 12:01 AM	10/17/91 11:59 PM	42	
102-20	10/2/91 12:01 AM	10/3/91 11:59 PM	40	112-11,21	10/2/91 12:01 AM	10/3/91 11:59 PM	40	
102-20	10/5/91 12:01 AM	10/6/91 11:59 PM	40,41	112-11,21	10/5/91 12:01 AM	10/6/91 11:59 PM	40,41	
102-20	10/9/91 12:01 AM	10/10/91 11:59 PM	41	112-11,21	10/9/91 12:01 AM	10/10/91 11:59 PM	41	
102-20	10/12/91 12:01 AM	10/13/91 11:59 PM	41,42	112-11,21	10/12/91 12:01 AM	10/13/91 11:59 PM	41,42	
102-20	10/16/91 12:01 AM	10/17/91 11:59 PM	42	112-11,21	10/16/91 12:01 AM	10/17/91 11:59 PM	42	
102-20	10/19/91 12:01 AM	10/20/91 11:59 PM	42,43	112-11,21	10/19/91 12:01 AM	10/20/91 11:59 PM	42,42	
102-20	10/23/91 12:01 AM	10/24/91 11:59 PM	43	112-11,21	10/23/91 12:01 AM	10/24/91 11:59 PM	43	
102-20	10/26/91 12:01 AM	10/27/91 11:59 PM	43,44	112-11,21	10/26/91 12:01 AM	10/27/91 11:59 PM	43,44	
102-20	10/30/91 12:01 AM	10/31/91 11:59 PM	44	112-11,21	10/30/91 12:01 AM	10/31/91 11:59 PM	44	
102-20	11/2/91 12:01 AM	11/3/91 11:59 PM	44,45	113-61	10/2/91 12:01 AM	10/3/91 11:59 PM	40	
102-20	11/6/91 12:01 AM	11/7/91 11:59 PM	45	113-61	10/5/91 12:01 AM	10/6/91 11:59 PM	40,41	
102-20	11/9/91 12:01 AM	11/10/91 11:59 PM	45,46	113-61	10/9/91 12:01 AM	10/10/91 11:59 PM	41	
102-20	11/13/91 12:01 AM	11/14/91 11:59 PM	46	113-62,66	10/2/91 12:01 AM	10/3/91 11:59 PM	40	
102-20	11/16/91 12:01 AM	11/17/91 11:59 PM	46,47	113-62,66	10/5/91 12:01 AM	10/6/91 11:59 PM	40,41	
102-20	11/20/91 12:01 AM	11/21/91 11:59 PM	47	113-62,66	10/9/91 12:01 AM	10/10/91 11:59 PM	41	
102-20	11/23/91 12:01 AM	11/24/91 11:59 PM	47,48	133-63,64,65	10/2/91 12:01 AM	10/3/91 11:59 PM	40	
102-20	11/27/91 12:01 AM	11/28/91 11:59 PM	48	133-63,64,65	10/5/91 12:01 AM	10/6/91 11:59 PM	40,41	
102-20	11/30/91 12:01 AM	12/1/91 11:59 PM	48,49	133-63,64,65	10/9/91 12:01 AM	10/10/91 11:59 PM	41	
102-20	12/4/91 12:01 AM	12/5/91 11:59 PM	49	133-63,64,65	10/12/91 12:01 AM	10/13/91 11:59 PM	41,42	
102-20	12/7/91 12:01 AM	12/8/91 11:59 PM	49,50	133-63,64,65	10/16/91 12:01 AM	10/17/91 11:59 PM	42	
102-20	12/11/91 12:01 AM	12/12/91 11:59 PM	50	133-63,64,65	10/19/91 12:01 AM	10/20/91 11:59 PM	42	
102-20	12/14/91 12:01 AM	12/15/91 11:59 PM	50,51	133-63,64,65	10/23/91 12:01 AM	10/24/91 11:59 PM	43	
102-20	12/18/91 12:01 AM	12/19/91 11:59 PM	51	133-63,64,65	10/26/91 12:01 AM	10/27/91 11:59 PM	43,44	
102-20	12/21/91 12:01 AM	12/22/91 11:59 PM	51,52	133-63,64,65	10/30/91 12:01 AM	10/31/91 11:59 PM	44	
102-20	12/25/91 12:01 AM	12/26/91 11:59 PM	52	133-63,64,65	11/2/91 12:01 AM	11/3/91 11:59 PM	44,45	
102-20	12/28/91 12:01 AM	12/29/91 11:59 PM	52,53	133-63,64,65	11/6/91 12:01 AM	11/7/91 11:59 PM	45	
102-20	1/1/92 12:01 AM	1/2/92 11:59 PM	1	133-63,64,65	11/9/91 12:01 AM	11/10/91 11:59 PM	45,46	
102-20	1/4/92 12:01 AM	1/5/92 11:59 PM	1,2	133-63,64,65	11/13/91 12:01 AM	11/14/91 11:59 PM	46	
102-80	10/26/91 12:01 AM	10/27/91 11:59 PM	43,44	133-63,64,65	11/16/91 12:01 AM	11/17/91 11:59 PM	46,47	
102-80	10/30/91 12:01 AM	10/31/91 11:59 PM	44	133-63,64,65	11/20/91 12:01 AM	11/21/91 11:59 PM	47	
102-80	11/2/91 12:01 AM	11/3/91 11:59 PM	44,45	133-63,64,65	11/23/91 12:01 AM	11/24/91 11:59 PM	47,48	
102-80	11/6/91 12:01 AM	11/7/91 11:59 PM	45	133-63,64,65	11/27/91 12:01 AM	11/28/91 11:59 PM	48	
102-80	11/9/91 12:01 AM	11/10/91 11:59 PM	45,46	133-63,64,65	11/30/91 12:01 AM	12/1/91 11:59 PM	48,49	
102-80	11/13/91 12:01 AM	11/14/91 11:59 PM	46	113-71,72,73	10/2/91 12:01 AM	10/3/91 11:59 PM	40	
102-80	11/16/91 12:01 AM	11/17/91 11:59 PM	46,47	113-71,72,73	10/5/91 12:01 AM	10/6/91 11:59 PM	40,41	
102-80	11/20/91 12:01 AM	11/21/91 11:59 PM	47	113-71,72,73	10/9/91 12:01 AM	10/10/91 11:59 PM	41	
102-80	11/23/91 12:01 AM	11/24/91 11:59 PM	47,48	113-71,72,73	10/12/91 12:01 AM	10/13/91 11:59 PM	41,42	
102-80	11/27/91 12:01 AM	11/28/91 11:59 PM	48	113-71,72,73	10/16/91 12:01 AM	10/17/91 11:59 PM	42	
102-80	11/30/91 12:01 AM	12/1/91 11:59 PM	48,49	113-71,72,73	10/19/91 12:01 AM	10/20/91 11:59 PM	42,43	
102-80	12/4/91 12:01 AM	12/5/91 11:59 PM	49	113-71,72,73	10/23/91 12:01 AM	10/24/91 11:59 PM	43	
102-80	12/7/91 12:01 AM	12/8/91 11:59 PM	49,50	113-71,72,73	10/26/91 12:01 AM	10/27/91 11:59 PM	43,44	
102-80	12/11/91 12:01 AM	12/12/91 11:59 PM	50	113-71,72,73	10/30/91 12:01 AM	10/31/91 11:59 PM	44	
103-40	10/26/91 12:01 AM	10/27/91 11:59 PM	43,44	113-71,72,73	11/2/91 12:01 AM	11/3/91 11:59 PM	44,45	
103-40	10/30/91 12:01 AM	10/31/91 11:59 PM	44	113-71,72,73	11/6/91 12:01 AM	11/7/91 11:59 PM	45	
103-40	11/2/91 12:01 AM	11/3/91 11:59 PM	44,45	113-71,72,73	11/9/91 12:01 AM	11/10/91 11:59 PM	45,46	
103-40	11/6/91 12:01 AM	11/7/91 11:59 PM	45					
103-40	11/9/91 12:01 AM	11/10/91 11:59 PM	45,46					
103-40	11/13/91 12:01 AM	11/14/91 11:59 PM	46					
103-40	11/16/91 12:01 AM	11/17/91 11:59 PM	46,47					
103-40	11/20/91 12:01 AM	11/21/91 11:59 PM	47					

-continued-

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94/95 Season Sea Cucumber Openings

Stat Area(s)	Opening Date/Time	Closing Date/Time	Stat Wk.	Stat Area(s)	Opening Date/Time	Closing Date/Time	Stat Wk.
101-10,11	11/7/94 8:00 AM	11/7/94 3:00 PM	46	102-80	1/2/95 8:00 AM	1/2/95 3:00 PM	1
101-10,11	11/14/94 8:00 AM	11/14/94 3:00 PM	47	102-80	1/3/95 8:00 AM	1/3/95 12:00 PM	1
101-10,11	11/21/94 8:00 AM	11/21/94 3:00 PM	48	102-80	1/9/95 8:00 AM	1/9/95 3:00 PM	2
101-10,11	11/28/94 8:00 AM	11/28/94 3:00 PM	49	102-80	1/10/95 8:00 AM	1/10/95 12:00 PM	2
101-10,11	12/5/94 8:00 AM	12/5/94 3:00 PM	50	103-40	11/7/94 8:00 AM	11/7/94 3:00 PM	46
101-10,11	12/6/94 8:00 AM	12/6/94 12:00 PM	50	103-41	11/14/94 8:00 AM	11/14/94 3:00 PM	47
101-10,11	12/12/94 8:00 AM	12/12/94 3:00 PM	51	103-42	11/21/94 8:00 AM	11/21/94 3:00 PM	48
101-10,11	12/13/94 8:00 AM	12/13/94 12:00 PM	51	103-43	11/28/94 8:00 AM	11/28/94 3:00 PM	49
101-10,11	12/19/94 8:00 AM	12/19/94 3:00 PM	52	103-44	12/5/94 8:00 AM	12/5/94 3:00 PM	50
101-10,11	12/20/94 8:00 AM	12/20/94 12:00 PM	52	103-45	12/6/94 8:00 AM	12/6/94 12:00 PM	50
101-10,11	12/26/94 8:00 AM	12/26/94 3:00 PM	53	103-46	12/12/94 8:00 AM	12/12/94 3:00 PM	51
101-10,11	12/27/94 8:00 AM	12/27/94 12:00 PM	53	103-47	12/13/94 8:00 AM	12/13/94 12:00 PM	51
101-10,11	1/2/95 8:00 AM	1/2/95 3:00 PM	1	103-48	12/19/94 8:00 AM	12/19/94 3:00 PM	52
101-10,11	1/3/95 8:00 AM	1/3/95 12:00 PM	1	103-49	12/20/94 8:00 AM	12/20/94 12:00 PM	52
101-10,11	1/9/95 8:00 AM	1/9/95 3:00 PM	2	103-50	12/26/94 8:00 AM	12/26/94 3:00 PM	53
101-10,11	1/10/95 8:00 AM	1/10/95 12:00 PM	2	103-51	12/27/94 8:00 AM	12/27/94 12:00 PM	53
101-90,95	11/7/94 8:00 AM	11/7/94 3:00 PM	46	103-52	1/2/95 8:00 AM	1/2/95 3:00 PM	1
101-90,95	11/14/94 8:00 AM	11/14/94 3:00 PM	47	103-53	1/3/95 8:00 AM	1/3/95 12:00 PM	1
101-90,95	11/21/94 8:00 AM	11/21/94 3:00 PM	48	103-54	1/9/95 8:00 AM	1/9/95 3:00 PM	2
101-90,95	11/28/94 8:00 AM	11/28/94 3:00 PM	49	103-55	1/10/95 8:00 AM	1/10/95 12:00 PM	2
101-90,95	12/5/94 8:00 AM	12/5/94 3:00 PM	50	103-56	1/16/95 8:00 AM	1/16/95 3:00 PM	3
101-90,95	12/6/94 8:00 AM	12/6/94 12:00 PM	50	103-57	1/17/95 8:00 AM	1/17/95 12:00 PM	3
101-90,95	12/12/94 8:00 AM	12/12/94 3:00 PM	51	103-58	1/23/95 8:00 AM	1/23/95 3:00 PM	4
101-90,95	12/13/94 8:00 AM	12/13/94 12:00 PM	51	103-59	1/24/95 8:00 AM	1/24/95 12:00 PM	4
101-90,95	12/19/94 8:00 AM	12/19/94 3:00 PM	52	103-80	11/7/94 8:00 AM	11/7/94 3:00 PM	46
101-90,95	12/20/94 8:00 AM	12/20/94 12:00 PM	52	103-80	11/14/94 8:00 AM	11/14/94 3:00 PM	47
101-90,95	12/26/94 8:00 AM	12/26/94 3:00 PM	53	103-80	11/21/94 8:00 AM	11/21/94 3:00 PM	48
101-90,95	12/27/94 8:00 AM	12/27/94 12:00 PM	53	103-80	11/28/94 8:00 AM	11/28/94 3:00 PM	49
101-90,95	1/2/95 8:00 AM	1/2/95 3:00 PM	1	103-80	12/5/94 8:00 AM	12/5/94 3:00 PM	50
102-20	11/7/94 8:00 AM	11/7/94 3:00 PM	46	103-80	12/6/94 8:00 AM	12/6/94 12:00 PM	50
102-20	11/14/94 8:00 AM	11/14/94 3:00 PM	47	103-80	12/12/94 8:00 AM	12/12/94 3:00 PM	51
102-20	11/21/94 8:00 AM	11/21/94 3:00 PM	48	106-30	11/7/94 8:00 AM	11/7/94 3:00 PM	46
102-20	11/28/94 8:00 AM	11/28/94 3:00 PM	49	106-30	11/14/94 8:00 AM	11/14/94 3:00 PM	47
102-20	12/5/94 8:00 AM	12/5/94 3:00 PM	50	106-30	11/21/94 8:00 AM	11/21/94 3:00 PM	48
102-20	12/6/94 8:00 AM	12/6/94 12:00 PM	50	106-30	11/28/94 8:00 AM	11/28/94 3:00 PM	49
102-20	12/12/94 8:00 AM	12/12/94 3:00 PM	51	106-30	12/5/94 8:00 AM	12/5/94 3:00 PM	50
102-20	12/13/94 8:00 AM	12/13/94 12:00 PM	51	106-30	12/6/94 8:00 AM	12/6/94 12:00 PM	50
102-20	12/19/94 8:00 AM	12/19/94 3:00 PM	52	106-30	12/12/94 8:00 AM	12/12/94 3:00 PM	51
102-20	12/20/94 8:00 AM	12/20/94 12:00 PM	52	106-30	12/13/94 8:00 AM	12/13/94 12:00 PM	51
102-20	12/26/94 8:00 AM	12/26/94 3:00 PM	53	106-30	12/19/94 8:00 AM	12/19/94 3:00 PM	52
102-20	12/27/94 8:00 AM	12/27/94 12:00 PM	53	106-30	12/20/94 8:00 AM	12/20/94 12:00 PM	52
102-20	1/2/95 8:00 AM	1/2/95 3:00 PM	1	106-30	12/26/94 8:00 AM	12/26/94 3:00 PM	53
102-20	1/3/95 8:00 AM	1/3/95 12:00 PM	1	106-30	12/27/94 8:00 AM	12/27/94 12:00 PM	53
102-20	1/9/95 8:00 AM	1/9/95 3:00 PM	2	109-44,45,50	11/7/94 8:00 AM	11/7/94 3:00 PM	46
102-20	1/10/95 8:00 AM	1/10/95 12:00 PM	2	109-44,45,50	11/14/94 8:00 AM	11/14/94 3:00 PM	47
102-20	1/16/95 8:00 AM	1/16/95 3:00 PM	3	109-44,45,50	11/21/94 8:00 AM	11/21/94 3:00 PM	48
102-20	1/17/95 8:00 AM	1/17/95 12:00 PM	3	109-44,45,50	11/28/94 8:00 AM	11/28/94 3:00 PM	49
102-80	11/7/94 8:00 AM	11/7/94 3:00 PM	46	109-44,45,50	12/5/94 8:00 AM	12/5/94 3:00 PM	50
102-80	11/14/94 8:00 AM	11/14/94 3:00 PM	47	109-44,45,50	12/6/94 8:00 AM	12/6/94 12:00 PM	50
102-80	11/21/94 8:00 AM	11/21/94 3:00 PM	48	109-44,45,50	12/12/94 8:00 AM	12/12/94 3:00 PM	51
102-80	11/28/94 8:00 AM	11/28/94 3:00 PM	49	109-44,45,50	12/13/94 8:00 AM	12/13/94 12:00 PM	51
102-80	12/5/94 8:00 AM	12/5/94 3:00 PM	50	109-44,45,50	12/19/94 8:00 AM	12/19/94 3:00 PM	52
102-80	12/6/94 8:00 AM	12/6/94 12:00 PM	50	109-44,45,50	12/20/94 8:00 AM	12/20/94 12:00 PM	52
102-80	12/12/94 8:00 AM	12/12/94 3:00 PM	51	109-44,45,50	12/26/94 8:00 AM	12/26/94 3:00 PM	53
102-80	12/13/94 8:00 AM	12/13/94 12:00 PM	51	109-44,45,50	12/27/94 8:00 AM	12/27/94 12:00 PM	53
102-80	12/19/94 8:00 AM	12/19/94 3:00 PM	52	109-44,45,50	1/2/95 8:00 AM	1/2/95 3:00 PM	1
102-80	12/20/94 8:00 AM	12/20/94 12:00 PM	52	109-44,45,50	1/3/95 8:00 AM	1/3/95 12:00 PM	1
102-80	12/26/94 8:00 AM	12/26/94 3:00 PM	53	109-44,45,50	1/9/95 8:00 AM	1/9/95 3:00 PM	2
102-80	12/27/94 8:00 AM	12/27/94 12:00 PM	53	109-44,45,50	1/10/95 8:00 AM	1/10/95 12:00 PM	2

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94/95 Season Sea Cucumber Openings				94/95 Season Sea Cucumber Openings (cont.)			
Stat Area(s)	Opening Date/Time	Closing Date/Time	Stat Wk.	Stat Area(s)	Opening Date/Time	Closing Date/Time	Stat Wk.
109-44,45,50	1/16/95 8:00 AM	1/16/95 3:00 PM	3	113-71,72,73	1/23/95 8:00 AM	1/23/95 3:00 PM	4
109-44,45,50	1/17/95 8:00 AM	1/17/95 12:00 PM	3	113-71,72,73	1/24/95 8:00 AM	1/24/95 12:00 PM	4
109-44,45,50	1/23/95 8:00 AM	1/23/95 3:00 PM	4	113-71,72,73	1/30/95 8:00 AM	1/30/95 3:00 PM	5
109-44,45,50	1/25/95 8:00 AM	1/25/95 12:00 PM	4	113-71,72,73	1/31/95 8:00 AM	1/31/95 12:00 PM	5
109-44,45,50	1/30/95 8:00 AM	1/30/95 3:00 PM	5	113-71,72,73	2/6/95 8:00 AM	2/6/95 3:00 PM	6
109-44,45,50	1/31/95 8:00 AM	1/31/95 12:00 PM	5	113-71,72,73	2/7/95 8:00 AM	2/7/95 12:00 PM	6
109-44,45,50	2/6/95 8:00 AM	2/6/95 3:00 PM	6	113-71,72,73	2/13/95 8:00 AM	2/13/95 3:00 PM	7
109-44,45,50	2/7/95 8:00 AM	2/7/95 12:00 PM	6	113-71,72,73	2/14/95 8:00 AM	2/14/95 12:00 PM	7
109-44,45,50	2/13/95 8:00 AM	2/13/95 3:00 PM	7	113-71,72,73	2/20/95 8:00 AM	2/20/95 3:00 PM	8
109-44,45,50	2/14/95 8:00 AM	2/14/95 12:00 PM	7	113-71,72,73	2/21/95 8:00 AM	2/21/95 12:00 PM	8
109-44,45,50	2/20/95 8:00 AM	2/20/95 3:00 PM	8	97/98 Season Sea Cucumber Openings			
109-44,45,50	2/21/95 8:00 AM	2/21/95 12:00 PM	8	101-10,11	10/6/97 8:00 AM	10/6/97 3:00 PM	41
109-44,45,50	2/27/95 8:00 AM	2/27/95 3:00 PM	9	101-10,11	10/13/97 8:00 AM	10/13/97 3:00 PM	42
109-44,45,50	2/28/95 8:00 AM	2/28/95 12:00 PM	9	101-10,11	10/20/97 8:00 AM	10/20/97 3:00 PM	43
109-44,45,50	3/6/95 8:00 AM	3/6/95 3:00 PM	10	101-10,11	10/27/97 8:00 AM	10/27/97 3:00 PM	44
109-44,45,50	3/7/95 8:00 AM	3/7/95 12:00 PM	10	101-10,11	11/3/97 8:00 AM	11/3/97 3:00 PM	45
109-44,45,50	3/13/95 8:00 AM	3/13/95 3:00 PM	11	101-10,11	11/3/97 8:00 AM	11/3/97 3:00 PM	45
109-44,45,50	3/14/95 8:00 AM	3/14/95 12:00 PM	11	101-90,95	10/6/97 8:00 AM	10/6/97 3:00 PM	41
109-44,45,50	3/20/95 8:00 AM	3/20/95 3:00 PM	12	101-90,95	10/13/97 8:00 AM	10/13/97 3:00 PM	42
109-44,45,50	3/21/95 8:00 AM	3/21/95 12:00 PM	12	101-90,95	10/20/97 8:00 AM	10/20/97 3:00 PM	43
109-44,45,50	3/27/95 8:00 AM	3/27/95 3:00 PM	13	101-90,95	10/27/97 8:00 AM	10/27/97 3:00 PM	44
109-44,45,50	3/28/95 8:00 AM	3/28/95 12:00 PM	13	101-90,95	11/3/97 8:00 AM	11/3/97 3:00 PM	45
112-11,21	11/7/94 8:00 AM	11/7/94 3:00 PM	46	101-90,95	11/4/97 8:00 AM	11/4/97 12:00 PM	45
112-11,21	11/14/94 8:00 AM	11/14/94 3:00 PM	47	102-20	10/6/97 8:00 AM	10/6/97 3:00 PM	41
112-11,21	11/21/94 8:00 AM	11/21/94 3:00 PM	48	102-20	10/13/97 8:00 AM	10/13/97 3:00 PM	42
112-11,21	11/28/94 8:00 AM	11/28/94 3:00 PM	49	102-20	10/20/97 8:00 AM	10/20/97 3:00 PM	43
112-11,21	12/5/94 8:00 AM	12/5/94 3:00 PM	50	102-20	10/27/97 8:00 AM	10/27/97 3:00 PM	44
112-11,21	12/6/94 8:00 AM	12/6/94 12:00 PM	50	102-20	11/3/97 8:00 AM	11/3/97 3:00 PM	45
112-11,21	12/12/94 8:00 AM	12/12/94 3:00 PM	51	102-20	11/4/97 8:00 AM	11/4/97 12:00 PM	45
112-11,21	12/13/94 8:00 AM	12/13/94 12:00 PM	51	102-20	11/10/97 8:00 AM	11/10/97 3:00 PM	46
112-11,21	12/19/94 8:00 AM	12/19/94 3:00 PM	52	102-80	10/6/97 8:00 AM	10/6/97 3:00 PM	41
112-11,21	12/20/94 8:00 AM	12/20/94 12:00 PM	52	102-81	10/13/97 8:00 AM	10/13/97 3:00 PM	42
112-11,21	12/26/94 8:00 AM	12/26/94 3:00 PM	53	102-82	10/20/97 8:00 AM	10/20/97 3:00 PM	43
112-11,21	12/27/94 8:00 AM	12/27/94 12:00 PM	53	102-83	10/27/97 8:00 AM	10/27/97 3:00 PM	44
112-11,21	1/2/95 8:00 AM	1/2/95 3:00 PM	1	102-84	11/3/97 8:00 AM	11/3/97 3:00 PM	45
112-11,21	1/3/95 8:00 AM	1/3/95 12:00 PM	1	102-85	11/4/97 8:00 AM	11/4/97 12:00 PM	45
112-11,21	1/9/95 8:00 AM	1/9/95 3:00 PM	2	102-86	11/10/97 8:00 AM	11/10/97 3:00 PM	46
113-62,63,64,65,66	11/7/94 8:00 AM	11/7/94 3:00 PM	46	102-87	11/11/97 8:00 AM	11/11/97 12:00 PM	46
113-62,63,64,65,66	11/14/94 8:00 AM	11/14/94 3:00 PM	47	103-40	10/6/97 8:00 AM	10/6/97 3:00 PM	41
113-62,63,64,65,66	11/21/94 8:00 AM	11/21/94 3:00 PM	48	103-40	10/13/97 8:00 AM	10/13/97 3:00 PM	42
113-62,63,64,65,66	11/28/94 8:00 AM	11/28/94 3:00 PM	49	103-40	10/20/97 8:00 AM	10/20/97 3:00 PM	43
113-71,72,73	11/7/94 8:00 AM	11/7/94 3:00 PM	46	103-40	10/27/97 8:00 AM	10/27/97 3:00 PM	44
113-71,72,73	11/14/94 8:00 AM	11/14/94 3:00 PM	47	103-40	11/3/97 8:00 AM	11/3/97 3:00 PM	45
113-71,72,73	11/21/94 8:00 AM	11/21/94 3:00 PM	48	103-40	11/4/97 8:00 AM	11/4/97 12:00 PM	45
113-71,72,73	11/28/94 8:00 AM	11/28/94 3:00 PM	49	103-40	11/10/97 8:00 AM	11/10/97 3:00 PM	46
113-71,72,73	12/5/94 8:00 AM	12/5/94 3:00 PM	50	103-40	11/11/97 8:00 AM	11/11/97 12:00 PM	46
113-71,72,73	12/6/94 8:00 AM	12/6/94 12:00 PM	50	103-40	11/17/97 8:00 AM	11/17/97 3:00 PM	47
113-71,72,73	12/12/94 8:00 AM	12/12/94 3:00 PM	51	103-80	10/6/97 8:00 AM	10/6/97 3:00 PM	41
113-71,72,73	12/13/94 8:00 AM	12/13/94 12:00 PM	51	103-80	10/13/97 8:00 AM	10/13/97 3:00 PM	42
113-71,72,73	12/19/94 8:00 AM	12/19/94 3:00 PM	52	103-80	10/20/97 8:00 AM	10/20/97 3:00 PM	43
113-71,72,73	12/20/94 8:00 AM	12/20/94 12:00 PM	52	103-80	10/27/97 8:00 AM	10/27/97 3:00 PM	44
113-71,72,73	12/26/94 8:00 AM	12/26/94 3:00 PM	53	106-30	10/6/97 8:00 AM	10/6/97 3:00 PM	41
113-71,72,73	12/27/94 8:00 AM	12/27/94 12:00 PM	53	106-30	10/13/97 8:00 AM	10/13/97 3:00 PM	42
113-71,72,73	1/2/95 8:00 AM	1/2/95 3:00 PM	1	106-30	10/20/97 8:00 AM	10/20/97 3:00 PM	43
113-71,72,73	1/3/95 8:00 AM	1/3/95 12:00 PM	1	106-30	10/27/97 8:00 AM	10/27/97 3:00 PM	44
113-71,72,73	1/9/95 8:00 AM	1/9/95 3:00 PM	2	112-11,21	10/6/97 8:00 AM	10/6/97 3:00 PM	41
113-71,72,73	1/10/95 8:00 AM	1/10/95 12:00 PM	2	112-11,21	10/13/97 8:00 AM	10/13/97 3:00 PM	42
113-71,72,73	1/16/95 8:00 AM	1/16/95 3:00 PM	3	112-11,21	10/20/97 8:00 AM	10/20/97 3:00 PM	43
113-71,72,73	1/17/95 8:00 AM	1/17/95 12:00 PM	3	112-11,21	10/27/97 8:00 AM	10/27/97 3:00 PM	44

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97/98 Season Sea Cucumber Openings (cont.)				00/01 Season Sea Cucumber Openings (cont.)			
Stat Area(s)	Opening Date/Time	Closing Date/Time	Stat Wk.	Stat Area(s)	Opening Date/Time	Closing Date/Time	Stat Wk.
112-11,21	11/10/97 8:00 AM	11/10/97 12:00 PM	46	103-80	10/3/00 8:00 AM	10/3/00 12:00 PM	41
112-41,42	10/6/97 8:00 AM	10/6/97 3:00 PM	41	103-80	10/9/00 8:00 AM	10/9/00 3:00 PM	42
112-41,42	10/13/97 8:00 AM	10/13/97 3:00 PM	42	103-80	10/10/00 8:00 AM	10/10/00 12:00 PM	42
112-41,42	10/20/97 8:00 AM	10/20/97 3:00 PM	43	106-30	10/2/00 8:00 AM	10/2/00 3:00 PM	41
112-41,42	10/27/97 8:00 AM	10/27/97 3:00 PM	44	106-30	10/3/00 8:00 AM	10/3/00 12:00 PM	41
112-43,44,45,46,47,48	10/6/97 8:00 AM	10/6/97 3:00 PM	41	106-30	10/9/00 8:00 AM	10/9/00 3:00 PM	42
112-43,44,45,46,47,48	10/13/97 8:00 AM	10/13/97 3:00 PM	42	106-30	10/10/00 8:00 AM	10/10/00 12:00 PM	42
112-43,44,45,46,47,48	10/20/97 8:00 AM	10/20/97 3:00 PM	43	106-30	10/16/00 8:00 AM	10/16/00 3:00 PM	43
112-43,44,45,46,47,48	10/27/97 8:00 AM	10/27/97 3:00 PM	44	106-30	10/17/00 8:00 AM	10/17/00 12:00 PM	43
112-43,44,45,46,47,48	11/3/97 8:00 AM	11/3/97 3:00 PM	45	106-30	10/23/00 8:00 AM	10/23/00 3:00 PM	44
112-43,44,45,46,47,48	11/4/97 8:00 AM	11/4/97 12:00 PM	45	112-11,21	10/2/00 8:00 AM	10/2/00 3:00 PM	41
112-43,44,45,46,47,48	11/10/97 8:00 AM	11/10/97 3:00 PM	46	112-11,21	10/3/00 8:00 AM	10/3/00 12:00 PM	41
112-43,44,45,46,47,48	11/11/97 8:00 AM	11/11/97 12:00 PM	46	112-11,21	10/9/00 8:00 AM	10/9/00 3:00 PM	42
112-43,44,45,46,47,48	11/17/97 8:00 AM	11/17/97 3:00 PM	47	112-11,21	10/10/00 8:00 AM	10/10/00 12:00 PM	42
<hr/>				112-11,21	10/16/00 8:00 AM	10/16/00 3:00 PM	43
<hr/>				112-11,21	10/17/00 8:00 AM	10/17/00 12:00 PM	43
<hr/>				112-11,21	10/24/00 8:00 AM	10/24/00 12:00 PM	44
101-10,11	10/2/00 8:00 AM	10/2/00 3:00 PM	41	112-11,21	10/30/00 8:00 AM	10/30/00 12:00 PM	45
101-10,11	10/3/00 8:00 AM	10/3/00 12:00 PM	41	112-41,42	10/2/00 8:00 AM	10/2/00 3:00 PM	41
101-10,11	10/9/00 8:00 AM	10/9/00 3:00 PM	42	112-41,42	10/3/00 8:00 AM	10/3/00 12:00 PM	41
101-10,11	10/10/00 8:00 AM	10/10/00 12:00 PM	42	112-41,42	10/9/00 8:00 AM	10/9/00 3:00 PM	42
101-10,11	10/16/00 8:00 AM	10/16/00 3:00 PM	43	112-41,42	10/10/00 8:00 AM	10/10/00 12:00 PM	42
101-10,11	10/17/00 8:00 AM	10/17/00 12:00 PM	43	112-41,42	10/16/00 8:00 AM	10/16/00 3:00 PM	43
101-25	10/2/00 8:00 AM	10/2/00 3:00 PM	41	112-41,42	10/17/00 8:00 AM	10/17/00 12:00 PM	43
101-26	10/3/00 8:00 AM	10/3/00 12:00 PM	41	113-62,63,64,65,66	10/2/00 8:00 AM	10/2/00 3:00 PM	41
101-90,95	10/2/00 8:00 AM	10/2/00 3:00 PM	41	113-62,63,64,65,66	10/3/00 8:00 AM	10/3/00 12:00 PM	41
101-90,95	10/3/00 8:00 AM	10/3/00 12:00 PM	41	113-62,63,64,65,66	10/9/00 8:00 AM	10/9/00 3:00 PM	42
101-90,95	10/9/00 8:00 AM	10/9/00 3:00 PM	42	113-62,63,64,65,66	10/10/00 8:00 AM	10/10/00 12:00 PM	42
101-90,95	10/10/00 8:00 AM	10/10/00 12:00 PM	42	113-62,63,64,65,66	10/16/00 8:00 AM	10/16/00 12:00 PM	42
101-90,95	10/16/00 8:00 AM	10/16/00 3:00 PM	43				
101-90,95	10/17/00 8:00 AM	10/17/00 12:00 PM	43				
101-90,95	10/23/00 8:00 AM	10/23/00 3:00 PM	44				
101-90,95	10/24/00 8:00 AM	10/24/00 12:00 PM	44				
102-20	10/2/00 8:00 AM	10/2/00 3:00 PM	41				
102-20	10/3/00 8:00 AM	10/3/00 12:00 PM	41				
102-20	10/9/00 8:00 AM	10/9/00 3:00 PM	42				
102-20	10/10/00 8:00 AM	10/10/00 12:00 PM	42				
102-20	10/16/00 8:00 AM	10/16/00 3:00 PM	43				
102-20	10/17/00 8:00 AM	10/17/00 12:00 PM	43				
102-20	10/23/00 8:00 AM	10/23/00 3:00 PM	44				
102-20	10/24/00 8:00 AM	10/24/00 12:00 PM	44				
102-20	10/30/00 8:00 AM	10/30/00 2:00 PM	45				
102-80	10/2/00 8:00 AM	10/2/00 3:00 PM	41				
102-80	10/3/00 8:00 AM	10/3/00 12:00 PM	41				
102-80	10/9/00 8:00 AM	10/9/00 3:00 PM	42				
102-80	10/10/00 8:00 AM	10/10/00 12:00 PM	42				
102-80	10/16/00 8:00 AM	10/16/00 3:00 PM	43				
102-80	10/17/00 8:00 AM	10/17/00 12:00 PM	43				
102-80	10/23/00 8:00 AM	10/23/00 3:00 PM	44				
102-80	10/24/00 8:00 AM	10/24/00 12:00 PM	44				
102-80	10/30/00 8:00 AM	10/30/00 12:00 PM	45				
103-21,30	10/2/00 8:00 AM	10/2/00 3:00 PM	41				
103-21,30	10/3/00 8:00 AM	10/3/00 12:00 PM	41				
103-21,30	10/9/00 8:00 AM	10/9/00 3:00 PM	42				
103-21,30	10/10/00 8:00 AM	10/10/00 12:00 PM	42				
103-21,30	10/16/00 8:00 AM	10/16/00 3:00 PM	43				
103-21,30	10/17/00 8:00 AM	10/17/00 12:00 PM	43				
103-21,30	10/23/00 8:00 AM	10/23/00 3:00 PM	44				
103-21,30	10/24/00 8:00 AM	10/24/00 12:00 PM	44				
103-80	10/2/00 8:00 AM	10/2/00 3:00 PM	41				

Appendix 12. Commercial fishery average sample weights from bucket samples, 1991/1992 season.

Catch Date	101-11			101-90			102-20			102-80		
	N	Wt.	Avg.									
10/4/1991	--	--	--	600	116,224	194	--	--	--	--	--	--
	--	--	--	400	69,462	174	--	--	--	--	--	--
10/7/1991	--	--	--	--	--	--	640	144,826	226	--	--	--
10/11/1991	--	--	--	800	156,630	196	--	--	--	--	--	--
10/25/1991	--	--	--	--	--	--	1,000	191,134	191	--	--	--
10/28/1991	800	150,501	188	--	--	--	--	--	--	820	138,924	169
Total	800	150,501	188	1,800	342,316	190	1,640	335,960	205	820	138,924	169

Appendix 13. Sea Cucumber weights by subdistrict from the 1991 commercial fishery.

101-11 1991							101-90 1991						
N	300	Mean	179.5	Std.	56.7	dev.	N	300	Mean	148.5	Std.	48.3	dev.
39	123	145	164	195	224	263	38	102	120	135	159		
40	123	145	164	196	225	264	44	102	120	135	160		
50	124	145	164	197	226	264	45	102	121	136	161		
66	124	146	166	198	226	266	50	103	121	137	161		
77	124	146	166	199	227	267	52	103	121	137	161		
79	125	147	167	200	227	269	55	103	121	137	162		
83	125	147	167	201	229	272	56	105	122	138	163		
83	125	148	167	201	230	272	69	105	123	138	164		
84	125	148	168	203	230	280	70	105	123	139	164		
91	127	148	168	206	231	281	70	105	124	140	164		
96	127	149	170	207	233	283	71	106	124	140	165		
96	127	149	170	207	233	287	72	106	124	140	166		
97	127	150	171	207	235	288	72	107	124	141	166		
97	128	150	172	207	236	290	79	108	124	141	166		
99	130	150	172	207	236	291	81	108	125	141	167		
100	130	150	174	208	236	292	81	108	125	141	167		
102	130	150	174	209	237	294	82	108	125	141	168		
103	130	151	175	209	238	297	86	109	125	142	168		
104	131	152	176	209	238	298	86	110	126	142	169		
104	131	152	176	209	239	303	86	111	127	143	169		
106	132	152	178	210	239	308	87	111	128	145	170		
106	132	152	179	210	240	323	87	111	128	146	171		
106	134	153	180	210	241	336	87	111	129	146	172		
109	135	153	180	211	241	363	88	111	129	147	172		
109	136	153	180	211	242		88	112	129	147	173		
112	136	154	180	211	242		88	113	129	148	173		
114	137	155	181	212	242		89	113	130	149	174		
114	137	156	182	212	244		90	113	130	149	174		
114	138	156	183	212	244		91	114	130	149	175		
114	138	156	183	213	244		91	114	130	150	175		
114	138	157	184	213	245		92	114	130	151	175		
114	140	158	184	213	245		94	114	130	151	177		
115	140	158	184	214	247		95	116	130	152	177		
115	141	158	184	214	250		95	116	130	152	177		
115	141	158	185	216	250		97	117	131	152	178		
116	142	159	185	217	251		97	117	131	153	179		
116	142	160	185	217	252		97	117	132	154	180		
117	143	160	187	217	252		97	117	132	156	180		
117	143	160	188	217	252		97	117	132	156	181		
118	143	160	189	218	254		97	118	132	156	182		
119	143	161	189	220	255		98	119	132	157	183		
120	143	162	190	221	256		100	119	133	157	183		
121	143	162	191	221	257		100	119	133	158	183		
121	144	163	191	222	260		100	119	133	158	185		
122	144	163	193	223	261		100	120	134	158	186		
123	144	163	194	224	261		101	120	134	159	186		

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101-90 (cont.)		102-20						102-80		
1991	1991	N	300	N	300			N	300	
Mean	148.49	Mean	197.9	Std. dev.	63.6			Mean	180.4	
Std. dev.	48.312	Std. dev.	63.6					Std. dev.	48.6	
186	225	54	138	162	188	208	232	295	52	136
186	226	65	139	163	188	208	232	298	53	137
187	230	80	139	165	188	208	232	302	59	138
187	233	80	139	165	188	208	233	304	59	139
188	233	84	141	166	188	209	233	305	61	139
188	236	89	141	166	189	209	233	306	61	141
190	236	92	142	167	190	209	233	309	62	141
190	239	95	143	167	190	209	234	312	73	141
190	240	99	143	167	190	209	238	320	73	142
190	240	106	145	167	190	210	238	320	75	142
192	241	107	145	167	190	211	240	322	78	142
192	242	107	147	167	190	211	240	322	79	143
193	249	112	147	167	192	212	241	325	82	147
193	251	112	147	168	192	213	242	326	83	148
193	251	112	147	168	193	214	242	336	84	148
194	251	114	147	168	193	214	242	346	84	148
194	253	114	148	169	193	214	243	354	85	148
194	254	114	149	170	193	214	243	362	87	149
194	261	116	149	171	194	216	245	369	88	149
195	263	116	149	172	194	217	246	373	88	150
195	269	118	150	172	195	217	251	373	96	150
195	272	120	150	172	195	217	253	390	96	150
196	274	120	151	174	196	217	254	402	98	151
197	280	121	151	174	196	217	255	516	99	152
198		122	151	175	197	218	259		103	152
199		124	152	175	198	218	259		106	152
201		124	152	175	198	219	260		107	153
201		124	153	176	199	219	262		114	153
202		124	153	176	199	219	265		116	154
203		125	154	177	199	221	265		117	155
204		126	154	177	199	223	265		117	155
204		131	155	177	200	223	269		120	155
205		132	155	179	201	223	272		120	156
206		132	155	180	201	224	274		122	156
206		132	155	181	201	225	275		123	157
208		134	156	182	204	225	277		124	157
208		134	156	182	205	226	278		124	157
210		135	156	183	205	226	281		126	157
212		135	158	183	206	227	283		127	157
212		135	159	184	206	227	285		128	158
213		136	159	184	206	229	286		129	159
214		137	159	185	206	229	287		131	162
216		137	160	186	207	230	288		132	162
217		137	160	186	208	230	289		133	163
217		137	160	187	208	230	291		135	163
221		138	161	188	208	231	292		135	163

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102-80 (cont.)					103-40-001						
1991					1991						
N	300				N	300					
Mean	180.4				Mean	221.3					
Std. dev.	48.598				Std. dev.	63.8					
165	179	195	213	250	60	161	190	210	229	254	313
165	180	195	213	250	87	161	190	211	230	256	318
165	180	196	214	250	92	162	190	211	230	257	320
165	181	197	214	250	96	164	191	212	231	258	323
166	182	198	214	251	107	164	191	212	231	258	323
166	182	198	215	252	114	166	192	213	232	259	324
166	182	199	215	252	117	166	192	213	232	260	328
166	182	199	215	253	119	167	192	213	233	262	329
167	183	199	215	258	120	169	193	213	234	264	331
167	183	200	218	259	122	169	193	214	234	267	348
167	183	200	218	260	124	169	193	214	236	267	350
167	183	200	219	261	125	170	194	214	236	269	350
168	183	200	219	261	126	172	194	214	236	270	352
168	183	201	220	262	130	172	195	214	236	270	358
169	184	201	221	262	131	173	195	215	237	271	364
169	184	201	221	264	132	174	195	216	237	272	369
169	184	201	221	264	135	175	198	217	239	272	374
169	184	202	221	266	135	175	198	217	239	272	375
170	185	202	222	266	136	175	198	218	240	273	390
170	185	202	222	268	137	176	199	219	240	274	404
170	187	203	223	272	137	178	199	219	241	274	413
171	187	203	223	274	139	179	199	220	242	278	438
171	187	203	224	282	140	179	200	220	243	278	454
172	187	203	224	389	140	180	201	220	243	280	514
173	187	203	225		141	180	201	220	244	280	
173	188	204	225		143	180	202	221	244	280	
174	188	204	225		144	180	202	221	244	280	
174	188	205	226		145	181	203	223	244	281	
174	189	205	227		145	181	203	223	245	283	
174	189	205	228		147	182	203	223	245	284	
175	191	205	229		147	182	204	223	245	284	
175	191	205	230		147	182	204	224	247	285	
175	191	207	231		148	182	205	224	247	289	
175	191	207	231		148	182	206	224	248	289	
175	191	207	232		149	183	206	225	248	290	
176	192	207	232		149	183	206	226	248	290	
176	193	208	232		150	184	207	226	249	293	
176	193	208	239		154	184	207	226	251	293	
177	193	208	241		155	185	208	227	251	294	
177	193	208	241		155	185	208	227	251	295	
177	193	209	241		156	186	208	227	251	296	
178	194	209	244		156	186	208	227	252	300	
178	194	210	244		156	187	209	228	252	304	
178	194	210	246		157	188	210	228	252	306	
178	195	211	248		158	189	210	229	254	307	
179	195	212	249		160	189	210	229	254	313	

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103-80							112-21		
1991							1991		
N	300						N	101	
Mean	230.2						Mean	205.1	
Std. dev.	50.1						Std. dev.	60.2	
122	183	200	220	238	261	305	58	198	301
132	183	201	220	239	262	306	95	199	303
133	183	201	220	239	262	307	103	200	307
144	184	202	221	240	262	308	105	201	317
145	184	202	221	241	263	309	122	192	317
147	184	202	222	241	264	313	124	203	320
148	186	203	222	241	264	313	130	193	320
148	186	203	222	241	267	314	133	205	336
148	186	203	222	242	268	315	134	206	378
154	186	204	223	242	268	317	138	207	
154	188	206	223	243	269	321	137	208	
155	189	206	223	244	270	327	137	209	
155	189	206	223	244	270	329	138	194	
159	190	206	225	245	270	332	138	203	
160	190	207	225	246	270	344	140	212	
161	191	207	226	246	270	351	141	203	
161	191	207	226	246	271	354	141	216	
162	191	208	227	248	273	355	147	228	
163	191	208	227	248	274	360	145	216	
164	192	209	227	249	275	362	146	222	
165	192	210	228	249	276	371	147	223	
166	192	211	229	250	277	394	148	226	
168	192	211	230	250	278	397	152	228	
168	193	211	230	250	278	430	154	235	
168	193	212	231	251	280		155	236	
169	193	212	231	251	280		160	236	
170	194	212	232	251	282		162	244	
170	194	213	232	251	284		164	239	
171	194	213	233	252	285		166	242	
171	195	213	233	252	285		166	244	
172	195	214	234	254	286		167	248	
173	196	214	234	254	287		171	252	
173	196	214	234	255	287		172	253	
175	196	214	235	256	288		180	252	
176	196	215	235	256	290		182	253	
176	196	215	235	256	291		182	255	
177	196	215	235	256	291		185	259	
178	196	216	235	257	292		189	263	
179	197	216	235	258	293		190	266	
179	197	216	236	258	295		191	263	
179	197	218	236	259	299		192	266	
179	198	218	236	259	301		193	271	
180	198	219	236	259	301		194	277	
180	199	219	236	259	301		195	282	
181	199	220	236	260	303		196	297	
183	200	220	237	261	305		191	300	

Appendix 14. Sea Cucumber weights by subdistrict from the 1994 commercial fishery.

101-11 11/7 - 21/94						101-90 11/7/94 - 1/3 /95					
N	250					N	615				
Mean	202.1					Mean	156.4				
Std dev.	62.7					Std dev.	62.7				
53	151	175	202	237	290	28	87	104	114	124	131
60	151	176	202	237	298	37	87	104	114	125	131
74	152	177	203	238	298	46	88	104	115	125	131
79	152	178	203	238	300	49	88	105	115	125	131
86	153	179	203	242	303	50	88	105	115	125	131
86	153	180	205	243	305	54	88	105	115	125	132
90	153	180	205	243	309	54	88	105	115	125	132
92	153	180	207	244	314	56	89	106	115	126	133
98	153	181	208	245	319	58	90	106	116	126	133
105	153	181	209	245	319	58	90	106	116	126	133
112	154	182	211	247	320	61	90	106	116	126	133
116	157	182	211	248	326	62	90	106	116	126	134
117	157	183	212	249	328	64	90	106	116	126	134
119	157	185	212	251	330	64	91	106	116	126	134
119	157	185	213	251	357	65	91	107	117	126	134
121	157	185	213	253	369	68	92	107	117	127	134
121	158	185	214	253	375	69	93	107	117	127	134
122	159	186	214	256	380	69	93	107	118	127	134
122	159	187	216	259	421	70	94	107	118	127	134
123	160	187	218	260	423	70	95	107	118	127	135
123	161	187	218	260		70	95	107	118	128	135
125	162	187	218	261		71	96	107	118	128	135
126	164	188	218	262		71	97	108	118	128	135
129	165	188	219	263		73	97	108	119	128	136
131	165	189	219	263		73	97	108	120	128	136
132	165	189	219	264		74	98	109	120	128	136
133	166	190	220	265		75	98	109	120	128	137
133	166	190	220	265		75	98	110	120	128	137
134	166	192	221	266		75	98	110	120	129	137
138	167	192	223	268		78	98	110	120	129	137
138	167	192	223	270		78	98	110	120	129	137
138	168	193	224	271		79	99	111	120	129	137
139	168	194	226	272		79	99	111	121	129	137
139	168	194	226	272		80	99	111	121	129	138
140	168	194	228	274		80	100	112	121	129	138
141	169	194	228	275		81	101	112	122	130	138
142	169	195	228	275		81	101	112	122	130	138
142	169	196	229	279		82	101	113	123	130	138
142	169	196	230	280		83	102	113	123	130	138
144	170	198	230	281		83	102	113	123	130	139
145	170	198	231	284		84	103	113	123	130	139
146	171	200	232	284		85	103	113	123	130	140
147	173	200	234	285		85	103	114	123	131	140
148	174	201	234	285		85	103	114	123	131	140
151	174	201	236	285		86	103	114	123	131	140
151	175	202	236	286		87	103	114	124	131	140

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101-90 (cont.)							102-20				
11/7/94 - 1/3 /95							11/14/94 - 1/2 /95				
N	615						N	500			
Mean	156.4						Mean	194.2			
Std dev.	62.7						Std dev.	65.0			
140	149	158	169	180	200	226	311	56	125	140	153
140	149	159	169	181	200	226	324	62	125	140	153
140	150	159	169	181	201	227	324	70	125	141	154
141	150	159	170	181	201	228	343	72	126	141	154
141	150	159	170	181	201	229	345	74	126	141	154
141	150	159	170	181	201	229	352	82	127	141	154
141	150	159	170	182	202	229	352	87	127	141	155
141	151	159	171	183	202	231	358	93	127	142	155
141	151	159	171	184	202	232	369	94	128	142	155
142	151	159	171	184	203	234	386	94	129	143	155
142	152	160	171	184	203	234	386	99	130	143	155
142	152	160	172	184	204	236	388	101	130	143	155
142	152	161	172	186	204	236	392	103	130	143	155
142	153	161	172	187	204	242	426	103	132	143	155
142	153	161	172	188	205	244	474	104	132	144	155
142	153	161	172	188	205	247	498	105	133	144	155
143	153	161	172	188	205	249	519	106	133	144	155
143	153	161	173	189	206	249		108	133	144	156
143	153	162	174	189	206	249		109	133	144	157
143	154	163	174	189	206	251		109	134	145	157
144	154	163	174	189	206	252		110	134	145	157
144	154	163	175	191	207	252		110	134	146	158
144	154	163	175	191	207	253		111	134	146	158
144	154	164	175	191	208	256		112	135	147	158
144	154	164	175	192	209	258		112	136	147	160
144	155	164	175	192	209	261		112	136	147	160
145	155	164	176	192	209	261		113	137	147	160
145	155	164	176	193	209	262		113	137	147	161
145	155	164	176	193	210	262		114	137	148	162
145	155	165	176	193	211	263		114	137	148	163
145	155	165	176	193	211	264		117	138	148	163
145	155	165	177	193	211	269		117	138	149	163
145	156	166	177	193	212	272		117	138	149	163
145	156	166	177	194	215	273		118	138	149	165
146	156	166	177	194	215	274		118	138	149	165
146	156	167	178	194	215	275		118	138	149	165
146	156	167	178	195	216	277		118	138	150	165
146	157	167	178	195	217	278		120	139	150	165
147	157	168	179	195	218	281		121	139	150	165
147	157	168	179	196	218	289		122	139	150	165
147	157	168	179	196	220	292		122	139	151	166
147	157	168	179	197	220	292		123	139	151	166
147	157	169	179	197	221	294		123	139	151	166
148	158	169	179	198	221	302		123	140	152	167
148	158	169	180	199	221	306		124	140	152	167
149	158	169	180	199	224	309		124	140	152	168

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102-20 (cont.)							102-80		103-40b		
11/14/94 - 1/2 /95							11/7 - 12/12 /94		11/7 - 12/12 /94		
N	500						N	25	N	200	
Mean	194.2						Mean	159.0	Mean	229.3	
Std dev.	64.995						Std dev.	58.6	Std dev.	81.5	
168	180	193	204	217	239	304	93		70	151	
168	181	193	204	217	239	304	99		77	153	
169	181	193	204	217	239	305	106		90	154	
169	181	193	205	218	239	305	108		104	158	
170	181	194	205	219	240	307	110		106	158	
170	181	194	206	219	241	309	112		108	159	
170	182	194	206	219	244	310	114		109	159	
170	182	194	207	220	245	312	114		109	159	
171	183	194	207	220	246	313	114		110	161	
171	183	194	208	220	247	315	115		111	162	
171	183	194	208	221	247	315	119		111	163	
171	183	194	208	222	247	316	122		113	164	
172	184	194	209	222	250	317	135		116	168	
172	184	195	209	222	251	319	158		118	170	
172	184	195	210	223	251	322	167		122	172	
173	185	196	210	224	252	322	168		123	173	
173	186	196	210	224	252	323	169		125	174	
174	186	196	210	224	253	324	194		127	175	
174	186	197	211	225	253	325	198		128	176	
174	186	197	212	227	254	326	204		128	176	
175	186	197	212	228	254	327	218		131	179	
175	186	197	212	228	255	339	227		134	180	
175	187	198	212	228	256	341	248		136	183	
176	188	198	212	229	258	342	252		136	186	
176	188	198	213	231	259	344	311		137	187	
176	188	198	213	231	260	353			139	188	
176	188	198	213	231	262	354			142	193	
177	188	198	213	231	264	354			143	193	
177	188	199	213	232	264	357			144	193	
177	188	200	214	234	267	357			144	194	
177	189	200	214	234	268	368			145	195	
177	189	200	214	234	270	375			145	195	
177	189	201	214	234	271	402			146	196	
177	189	201	214	234	274	407			146	196	
177	190	201	214	234	274	414			146	198	
177	190	201	215	235	274	434			146	198	
178	190	201	215	235	274	445			147	200	
178	190	201	215	235	275	452			147	205	
179	191	201	215	236	276	483			148	205	
179	191	201	215	236	279	508			148	205	
179	191	202	215	236	281				148	207	
179	192	202	215	236	287				148	208	
179	193	203	215	237	289				149	208	
180	193	203	216	237	297				149	208	
180	193	204	216	238	301				150	208	
180	193	204	216	239	304				151	211	

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103-40-001 (cont.)		103-80									
11/7 - 12/12 /94		11/7 - 12/12 /94									
N	200	N	409								
Mean	229.26	Mean	229.5								
Std dev.	81.5	Std dev.	63.5								
214	278	344	65	165	186	201	214	231	247	272	308
216	278	345	68	166	186	202	214	231	247	273	309
217	279	347	80	167	186	202	214	231	248	273	309
221	281	349	83	167	187	203	215	231	248	273	309
222	281	362	84	168	187	203	216	231	248	275	309
223	284	365	91	168	187	203	216	232	249	275	312
223	285	366	95	168	188	203	216	232	249	275	313
223	286	387	103	169	188	203	216	232	249	277	313
224	287	390	122	169	189	204	216	232	250	277	314
224	289	391	126	170	189	204	217	233	251	278	318
226	290	392	128	170	189	204	218	233	252	279	319
228	290	413	128	171	190	204	218	233	254	279	320
231	292	422	129	172	191	204	218	234	254	279	321
233	293	424	132	172	191	205	219	234	254	280	324
233	295	437	133	172	192	205	219	234	255	282	325
234	295	481	136	173	193	205	220	234	255	282	326
235	295		138	174	193	206	220	235	255	286	332
236	296		139	175	193	206	220	236	255	286	334
237	296		140	175	193	207	220	236	255	286	335
241	298		140	176	194	207	220	236	256	287	342
246	299		142	176	194	207	221	237	257	288	343
248	299		143	177	194	207	221	237	257	292	349
250	304		144	177	195	207	222	237	257	292	351
250	305		147	177	196	207	222	237	257	293	355
250	305		148	179	196	208	222	237	259	293	356
250	306		149	179	196	208	222	237	259	293	360
251	306		149	179	196	209	223	237	259	294	361
252	307		150	179	197	209	224	238	261	294	366
254	310		152	180	197	209	224	239	261	294	369
255	311		152	180	197	210	224	240	261	294	373
255	312		153	180	197	210	225	240	263	295	373
257	312		154	180	197	210	225	241	263	296	375
257	316		155	181	198	211	225	241	264	296	383
257	317		155	181	198	211	225	241	264	297	386
257	319		157	182	198	211	226	241	265	298	392
258	322		160	182	199	212	226	242	265	298	418
262	322		161	182	199	212	226	242	265	298	431
264	322		161	183	199	212	227	242	266	299	432
265	325		162	183	199	212	228	242	267	300	460
268	325		164	183	199	212	228	244	268	300	461
269	328		164	184	200	212	228	244	268	301	570
269	330		164	184	201	212	229	245	269	303	
269	331		165	184	201	212	229	245	269	305	
270	332		165	185	201	213	229	245	270	305	
272	336		165	185	201	213	229	246	271	305	
276	341		165	185	201	213	231	247	271	305	

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106-30												
11/7 - 12/28 /94												
N	810											
Mean	254.6											
Std dev.	81.5											
77	147	163	176	192	201	212	223	236	247	259	272	288
79	147	164	177	192	202	212	223	236	248	259	272	288
84	147	164	177	192	202	213	223	236	248	261	272	288
89	148	164	177	192	203	213	223	237	249	262	272	288
90	148	164	177	192	203	214	224	237	249	262	273	288
91	148	165	177	193	203	214	224	237	249	262	273	289
96	148	165	177	193	204	215	224	238	250	262	273	289
96	148	165	177	193	204	215	224	238	250	262	273	289
105	149	165	178	194	204	215	224	238	250	262	274	289
109	150	166	179	194	204	215	224	239	250	263	275	289
109	150	166	180	194	204	216	225	239	250	263	276	289
111	150	166	180	194	204	216	225	239	250	263	276	289
113	150	166	180	194	204	216	225	240	250	264	277	290
114	150	167	180	194	205	216	226	240	251	264	277	290
117	150	167	181	195	205	216	226	240	251	264	278	290
119	150	167	181	195	205	216	228	240	251	264	278	290
120	150	168	181	196	205	217	228	241	251	264	279	290
120	151	168	182	196	205	217	228	241	251	264	279	290
122	152	168	182	196	205	218	229	241	251	264	280	291
125	152	169	182	196	205	218	229	241	251	265	280	291
126	153	169	182	196	205	218	229	241	251	265	280	292
127	153	169	183	196	205	218	229	241	252	265	281	292
130	154	170	184	197	206	218	229	242	252	265	281	292
130	156	170	184	197	206	219	230	242	252	266	281	292
131	156	170	185	197	206	219	230	242	253	266	282	292
131	156	170	186	197	206	219	230	243	253	266	282	292
131	156	171	186	197	206	219	230	243	253	266	282	293
132	156	171	186	197	206	219	231	243	253	267	282	293
133	157	171	186	198	206	219	231	244	254	267	282	293
133	157	172	186	198	207	219	231	244	254	268	283	294
136	157	172	187	198	208	219	231	244	255	268	283	294
137	158	172	187	198	209	220	231	244	255	268	284	294
138	158	173	187	198	209	220	232	244	255	268	284	294
138	158	173	187	198	209	220	232	244	255	268	284	294
140	158	173	188	198	209	220	232	244	255	269	284	294
141	158	174	188	199	209	221	232	244	255	269	284	294
141	158	174	188	199	209	221	233	245	256	269	284	295
142	158	174	189	200	210	221	233	245	256	269	285	295
142	160	174	189	200	210	222	233	245	256	269	285	295
142	160	175	189	201	210	222	234	246	257	270	285	296
142	161	175	189	201	210	222	234	246	257	271	286	296
143	161	176	189	201	211	222	235	246	257	271	286	296
143	162	176	190	201	211	222	235	247	257	271	287	297
144	162	176	190	201	212	222	235	247	258	271	287	297
146	162	176	191	201	212	222	235	247	259	271	287	297
146	163	176	192	201	212	223	236	247	259	272	287	299

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106-30 (cont.)					112-21				
11/7 - 12/28 /94					12/5-12/94				
N	810				N	200			
Mean	254.6				Mean	240.6			
Std dev.	81.475				Std dev.	57.6			
299	316	340	380	428	54	200	234	269	322
299	316	340	380	428	110	203	236	269	323
299	316	341	380	429	116	205	236	269	323
300	317	342	381	430	119	206	236	270	332
300	317	343	381	432	121	206	236	270	336
301	317	345	381	432	126	207	237	271	339
301	317	345	381	437	131	208	237	272	340
302	318	346	383	437	135	208	237	273	342
302	318	346	384	439	140	208	238	275	344
302	319	346	386	440	144	209	239	275	347
302	319	346	387	443	144	210	239	276	359
302	320	349	388	445	155	211	239	276	367
303	320	349	388	450	156	211	240	276	370
303	321	349	388	451	159	211	240	278	373
303	321	350	389	452	163	212	242	279	392
304	322	350	390	458	164	213	244	279	404
304	322	355	391	458	166	214	245	279	
305	323	355	391	462	166	215	245	280	
305	323	355	392	464	167	215	247	282	
305	323	356	393	468	168	216	247	284	
305	323	358	393	472	170	216	248	284	
305	324	359	395	486	171	218	249	285	
306	324	360	395	502	172	219	249	285	
306	324	362	395	505	172	219	250	285	
306	325	362	396	520	175	221	250	285	
306	325	363	397	529	175	221	250	287	
306	325	364	397	531	178	222	251	289	
307	326	365	399	534	179	222	253	290	
307	326	365	399		180	222	255	293	
307	327	366	401		182	224	255	293	
307	327	366	405		182	226	255	293	
308	328	367	406		184	226	256	297	
309	329	368	406		184	226	257	302	
310	330	368	410		189	226	258	303	
310	330	370	410		189	229	258	304	
310	330	371	410		190	230	258	305	
311	330	373	410		191	231	258	312	
311	331	373	410		192	231	260	313	
311	331	373	411		193	231	260	314	
313	332	374	411		194	231	260	314	
313	334	374	416		195	232	261	315	
314	335	374	419		196	233	263	315	
314	336	374	420		196	234	264	319	
314	336	376	420		197	234	264	319	
315	337	377	422		198	234	265	319	
315	337	380	423		198	234	266	319	

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113-63,64 11/21/94					113-72 12/19/94		
N	200				N	100	
Mean	213.5				Mean	182.5	
Std dev.	76.5				Std dev.	46.0	
58	153	196	237	343	72	171	252
68	153	199	238	345	98	174	259
74	153	199	240	347	113	176	263
80	154	199	240	351	118	176	264
83	154	201	242	354	122	176	264
99	155	204	242	356	123	178	286
99	157	205	244	358	124	179	304
102	158	206	244	377	126	180	324
104	160	207	244	380	129	181	
106	161	208	252	381	130	182	
107	161	209	253	384	131	184	
109	162	211	254	395	131	186	
112	162	212	256	399	132	188	
113	163	215	256	400	133	190	
114	165	216	256	420	133	191	
117	165	216	258	429	134	191	
120	167	217	260		137	191	
125	168	220	262		139	194	
126	168	220	263		141	197	
126	170	220	265		142	197	
127	170	221	272		143	197	
128	172	221	272		144	198	
129	174	222	275		147	202	
132	175	222	278		148	203	
133	175	223	281		148	203	
135	176	223	282		152	204	
135	178	225	285		153	204	
135	179	226	287		153	204	
136	182	226	289		154	206	
137	184	226	293		154	212	
139	185	227	297		156	214	
139	187	227	300		156	217	
141	187	227	301		159	222	
141	187	228	302		159	223	
142	188	228	302		160	223	
143	188	228	306		161	224	
143	189	229	311		162	224	
144	190	229	313		162	232	
145	191	231	317		162	237	
145	191	232	320		165	238	
145	192	233	326		166	238	
146	193	233	327		166	238	
147	193	233	327		166	240	
148	193	235	331		168	244	
150	194	236	333		170	245	
152	194	237	342		170	245	

Appendix 15. Sea cucumber weights by subdistrict from the 1997 commercial fishery.

101-10,11 10/6-11/3/97								101-90,95 10/6-11/4/97			
N	400	Mean	233.34	Std. Div.	64.06	N	475	Mean	175.15	Std. Div.	57.56
336	172	170	188	198	239	327	246	282	266	91	170
303	156	153	182	198	239	326	243	271	264	85	162
298	148	145	182	194	237	315	241	252	238	65	146
296	298	133	168	190	231	293	237	242	229	239	139
294	280	116	156	183	230	274	226	242	216	227	133
287	269	40	146	182	227	264	223	240	213	222	130
285	268	317	124	176	223	264	216	237	210	214	300
278	267	286	119	174	223	251	215	230	209	207	276
277	260	280	110	158	204	241	204	219	209	186	268
273	259	275	298	155	184	236	202	219	207	171	257
264	252	273	284	138	180	233	201	217	203	170	231
241	249	272	273	136	176	223	197	206	190	170	231
236	238	263	260	300	152	219	195	201	167	166	221
236	221	260	256	268	127	219	194	200	162	162	220
228	221	251	255	267	126	181	193	196	156	148	216
227	208	243	250	266	564	176	189	194	152	148	213
221	208	236	249	261	443	119	181	190	142	146	207
218	205	235	244	251	402	108	168	183	122	145	206
216	201	235	243	247	401	420	152	175	110	140	199
211	199	232	228	246	385	402	148	173	100	137	197
208	182	232	227	231	355	354	120	167	96	127	196
207	174	231	226	228	345	326	328	163	88	123	188
206	169	226	225	220	344	322	288	147	83	121	178
203	167	217	212	219	330	321	270	140	78	119	164
202	163	214	205	215	317	301	260		65	104	159
374	147	204	199	213	275	285	258		292	100	159
372	146	196	194	208	269	281	256		289	91	155
340	67	187	189	203	259	275	252		227	53	148
314	318	175	187	203	249	275	248		203	293	132
305	308	169	178	199	247	274	247		197	269	118
295	300	153	176	189	241	268	243		192	264	89
288	295	330	169	186	240	264	227		181	239	307
279	285	272	136	180	237	250	225		176	234	247
276	273	263	95	174	236	240	223		163	231	241
273	270	262	296	154	210	236	218		156	219	241
271	241	246	289	153	210	223	214		148	219	224
263	232	232	282	132	205	221	207		147	217	219
257	225	227	267	367	186	219	205		145	214	215
253	220	227	266	338	138	219	187		145	212	215
249	218	226	244	325	89	203	180		138	203	213
245	199	222	243	324	480	195	174		133	196	209
234	192	216	241	322	416	190	164		131	196	208
232	190	208	229	303	411	150	140		128	195	204
218	184	205	219	301	373	321	136		125	181	204
213	183	197	219	300	363	281	133		105	177	202
199	173	197	219	269	342	254	116		104	176	200
192	172	191	205	261	341	254	305		100	175	194

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101-90,95 (cont.) 10/6-11/4/97								102-20 10/13-11/10/97			
N	475							N	350		
Mean	175.15							Mean	212.48		
Std. Div.	57.557							Std. Div.	74.28		
185	173	141	144	248	219	85	183	295	118	186	218
184	170	136	142	237	205	79	180	257	116	184	218
182	161	131	141	227	189	363	180	248	111	162	214
169	154	130	139	218	168	245	142	244	383	141	206
164	151	129	132	203	167	229	132	242	362	135	204
151	139	125	124	202	148	229		237	346	111	200
134	136	123	123	201	144	227		237	337	355	194
125	131	123	119	196	141	225		216	322	317	188
115	124	118	117	192	134	217		214	308	283	137
322	115	117	116	188	128	217		200	298	281	554
284	111	109	111	185	127	216		199	288	267	333
257	89	109	106	182	127	200		197	287	262	329
232	275	108	105	172	127	198		196	277	248	307
225	239	98	102	169	126	197		187	267	245	306
218	222	83	93	159	123	197		183	266	239	289
216	215	267	78	158	122	197		178	256	239	287
208	214	264	75	158	119	190		172	249	236	285
203	211	259	69	148	119	186		171	243	232	261
202	203	256	277	143	118	177		170	240	230	254
199	198	236	230	123	116	168		164	231	228	243
197	193	225	222	101	111	158		163	225	222	230
192	191	210	207	267	102	153		163	224	219	217
183	191	208	186	249	82	146		128	217	202	206
178	188	177	185	226	72	128		127	212	184	205
173	187	171	171	218	282	122		77	212	178	203
161	185	168	164	211	277	109		234	198	176	192
157	181	168	164	196	241	91		229	194	169	191
152	176	162	163	191	231	410		208	91	165	178
151	173	162	159	179	212	396		206	436	140	173
148	173	160	159	177	195	355		205	341	132	145
145	170	160	157	167	193	348		195	318	121	144
144	170	155	150	164	165	339		195	293	673	120
133	164	145	141	164	159	333		187	286	382	114
121	151	144	139	163	154	332		185	281	373	83
289	107	139	136	161	148	313		177	269	360	371
285	75	129	115	160	138	300		172	266	350	321
246	55	121	105	142	137	287		172	265	316	293
244	208	118	92	138	132	287		168	261	296	291
232	193	112	90	130	130	279		166	244	295	264
226	177	105	83	130	128	271		164	243	294	246
219	173	184	82	126	126	265		159	243	293	236
206	170	183	76	121	123	257		155	240	293	236
202	169	175	65	119	117	216		142	229	276	222
199	154	172	273	119	114	214		141	206	264	209
184	152	169	261	118	113	198		136	198	258	205
180	148	148	257	117	112	195		133	194	256	185
174	147	146	250	255	108	189		128	188	225	181

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102-20 (cont.)				102-80				103-40-001			
10/13-11/10/97				11/11/1997				10/27-11/18/97			
N	350	N	150	N	425	Mean	198.07	Mean	71.62	Std. Div.	Std. Div.
Mean	212.48	Mean	233.79	Mean	425	198.07	71.62	Mean	71.62	Std. Div.	Std. Div.
Std. Div.	74.284	Std. Div.	82.10	Std. Div.	71.62	Std. Div.	71.62	Std. Div.	71.62	Std. Div.	Std. Div.
176	179	217	235	216	122	235	198	210	96	154	
170	169	210	187	205	106	234	194	206	94	150	
169	169	204	164	205	90	232	189	204	87	149	
162	165	202	162	202	411	217	188	204	361	148	
148	162	202	162	200	402	190	176	198	331	142	
144	157	195	158	196	390	166	166	196	277	126	
137	155	180	153	175	368	418	160	183	270	477	
131	138	173	148	167	361	361	154	178	247	373	
124	137	169	147	160	349	336	147	177	238	364	
116	132	165	145	159	332	335		175	233	352	
105	112	156	142	159	319	330		173	214	335	
101	109	148	141	159	314	319		173	213	283	
356	102	135	133	153	310	316		169	212	269	
324	94	132	123	152	306	303		167	208	254	
312	85	132	123	147	304	297		156	198	246	
295	325	129	117	143	300	295		156	187	220	
269	314	121	116	142	296	285		156	186	200	
256	296	117	116	136	295	277		150	182	191	
248	292	378	107	114	290	275		140	167	182	
246	285	340	95	112	281	268		135	163	171	
233	280	261	76	100	268	266		134	163	165	
220	280	246		99	256	256		122	162	160	
218	279	243		89	252	246		115	158	144	
214	274	241		83	250	215		95	157	143	
206	250	240		77	247	213		83	123	130	
198	248	225		257	227	212		438	120	126	
196	240	205		242	207	207		305	81	125	
196	234	205		227	107	190		275	42	125	
194	230	202		220	448	189		253	302	119	
194	228	193		215	426	187		200	256	116	
184	224	186		207	417	161		183	254	64	
178	220	182		200	391	404		174	236	375	
173	220	158		199	374	324		165	226	372	
167	203	152		198	357	271		150	217	305	
159	202	140		192	353	258		147	208	291	
141	197	139		183	327	250		144	199	268	
106	184	131		175	309	233		135	191	251	
283	164	121		173	306	228		135	188	243	
268	157	120		157	299	227		134	182	242	
263	152	98		155	276	223		132	179	240	
259	333	94		147	273	221		132	177	238	
249	250	89		143	273	219		128	171	233	
248	247	78		142	272	216		128	170	226	
222	238	410		140	268	213		128	170	215	
204	228	325		134	249	206		125	168	210	
200	227	258		130	248	199		112	164	209	
197	219	246		123	241	198		106	162	201	

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103-40-							103-80				
001											
10/27-11/18/97							10/6-11/27/97				
N Mean Std. Div.							N Mean Std. Div.	350 239.07 58.41			
425 198.07 71.621											
189	205	199	230	240	295	106	303	175	195	220	211
185	202	198	228	224	268	106	273	142	195	218	205
163	199	194	227	224	242		259	141	193	210	202
157	186	191	211	214	210		246	330	188	208	198
155	183	191	186	211	202		244	286	187	200	198
146	181	184	185	209	199		243	275	176	199	197
136	173	182	173	204	191		237	266	312	195	193
133	160	175	171	199	189		236	259	289	188	191
116	126	175	170	197	186		220	258	276	176	191
305	123	162	163	195	186		219	257	267	505	182
262	110	146	158	195	182		219	252	263	375	138
248	83	144	144	193	179		213	251	253	362	77
212	334	132	143	190	173		213	251	244	350	442
212	314	117	137	185	165		207	248	241	337	381
204	311	79	134	184	157		202	236	238	334	366
184	309	301	129	182	155		189	233	237	333	349
180	306	247	123	181	146		186	228	225	315	338
174	282	247	61	164	143		182	227	220	315	335
173	259	238	603	163	143		182	227	209	309	325
171	248	236	354	154	135		178	223	206	304	324
171	246	216	347	121	126		175	213	203	297	315
171	241	214	319	463	126		160	213	197	296	310
164	237	214	260	429	114		155	209	194	293	307
148	226	209	254	385	69		138	201	192	289	303
146	221	200	233	384	202		88	201	188	288	291
144	218	197	205	381	201		313	198	185	269	286
141	218	190	204	345	200		313	173	183	262	280
141	216	188	200	343	193		278	161	178	259	267
131	211	182	196	332	182		260	320	167	250	265
129	206	174	196	327	178		258	286	151	230	261
115	204	173	172	311	178		254	282	117	223	258
113	199	161	163	310	169		254	277	420	182	253
104	172	149	161	304	156		247	237	319	178	239
100	170	133	154	300	153		235	236	285	166	218
291	166	130	153	296	150		235	234	284	298	218
289	148	128	152	294	148		231	230	273	283	191
286	136	103	151	281	145		227	227	269	281	187
271	279	103	145	281	142		220	220	263	277	463
266	278	97	141	279	141		219	214	259	255	397
254	265	48	137	269	141		215	209	259	252	327
252	250	315	125	268	140		215	206	252	246	323
235	218	294	122	266	139		215	204	251	238	307
216	213	283	118	261	134		209	203	250	231	295
214	211	260	313	255	129		205	201	248	222	294
213	208	259	261	139	127		199	200	233	220	289
211	204	234	261	93	124		190	200	229	217	287
205	202	233	254	342	117		188	197	223	211	287

Appendix 15. (page 5 of 6)

103-80 (cont.)			106-30			112-11,21		
10/6-11/27/97			10/6-10/13/97			10/6-10/20/97		
N	350	N	100	N	350	N	350	N
Mean	239.07	Mean	225.09	Mean	199.70	Mean	199.70	Mean
Std. Div.	58.413	Std. Div.	76.16	Std. Div.	62.67	Std. Div.	62.67	Std. Div.
287	238	337	267	138	206	172	164	137
279	237	306	247	136	202	103	193	125
267	236	305	234	128	190	150	128	128
267	228	283	232	524	179	152	160	133
265	222	279	219	409	175	120	145	131
260	221	273	201	398	154	149	80	352
255	220	268	199	394		199	178	274
236	219	266	192	350		178	134	182
231	216	258	185	344		197	139	212
229	209	255	181	339		206	179	159
216	204	247	177	339		138	144	197
216	200	234	174	328		171	172	312
191	192	224	161	319		188	167	237
171	189	223	161	312		198	205	258
155	184	218	160	292		145	184	271
346	175	218	154	278		170	144	172
274	137	216	144	274		174	160	325
262	90	213	144	263		120	157	235
248	283	205	139	259		179	105	142
247	270	195	131	248		177	170	177
238	252	171	125	247		115	121	302
237	247		117	231		154	103	127
237	246		105	223		160	136	190
234	240		101	189		163	175	293
233	238		63	187		149	138	130
226	233		309	185		168	152	194
223	228		278	162		142	163	222
222	226		264	161		96	149	199
210	223		263	345		149	133	204
209	220		252	324		161	139	392
209	220		241	317		142	150	162
208	215		225	316		128	128	253
200	209		223	295		155	142	300
197	203		223	292		110	123	206
194	200		211	288		164	141	185
193	196		208	274		210	140	145
190	188		195	273		173	106	147
170	183		191	257		124	113	142
155	169		190	237		122	119	244
141	163		188	226		100	115	249
296	157		187	223		179	73	186
288	149		177	217		143	71	225
277	100		173	213		120	156	186
274	494		168	211		136	138	237
269	402		153	210		156	134	147
246	364		143	209		156	88	256
244	348		138	206		169	97	214

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112-11,21 (cont.)			112-41,42					
10/6-10/20/97			10/6-10/20/97					
N	350	N	253					
Mean	199.7	Mean	170.00					
Std. Div.	62.669	Std. Div.	43.47					
142	171	276	224	109	170	149	128	148
188	204	200	251	171	139	149	136	133
268	251	148	146	155	136	165	155	103
165	142	223	213	152	155	120	176	175
141	211	186	205	169	149	155	150	120
214	204	199	197	171	163	164	138	150
202	369	195	155	139	136	168	169	185
197	227	183	210	87	106	151	143	117
265	171	256	199	124	147	152	205	153
153	197	180	111	150	199	117	145	123
227	257	337	203	186	269	371	182	101
207	109	307	234	137	179	265	163	122
238	226	230	125	226	178	204	194	166
174	186	231	222	124	131	175	144	124
347	206	292	239	139	160	160	108	167
260	202	246	250	167	132	217	155	113
191	242	174	171	142	121	130	185	264
294	201	217	307	166	171	188	136	136
195	208	254	151	226	204	150	168	
204	257	269	256	237	206	122	183	
209	205	248	155	154	185	158	180	
164	266		222	240	147	133	108	
317	234		153	215	114	150	185	
248	191		241	236	189	178	126	
391	310		279	177	160	135	199	
245	78		211	146	163	167	229	
187	257		171	180	154	173	165	
279	323		217	247	175	161	129	
270	337		233	178	138	129	169	
189	244		166	180	117	145	140	
269	211		190	357	168	173	141	
58	241		188	213	270	131	123	
243	245		328	156	196	88	112	
214	239		212	229	187	205	116	
322	219		146	124	153	140	123	
279	242		150	236	153	177	145	
137	269		191	221	142	167	138	
164	364		224	179	174	170	154	
380	250		161	184	190	130	200	
290	206		163	215	147	203	147	
214	182		138	177	163	138	182	
248	315		146	205	159	134	177	
162	225		191	223	192	166	194	
279	175		257	108	180	136	190	
191	252		143	167	159	121	158	
255	195		201	147	176	169	133	
216	144		168	108	152	166	122	

Appendix 16. Sea cucumber weights by subdistrict from the 2000 commercial fishery.

101-10,11 10/3-10/17/00										101-25 10/3/2000		
N	425									N		
Mean	275.17									Mean		
Std. Div.	66.34									Std. Div.		
257	287	330	297	237	245	329	410	241	231	259		
361	390	192	246	264	199	179	289	194	173	172		
249	252	231	248	290	255	182	260	101		193		
407	244	182	210	362	275	260	310	205		223		
331	240	259	231	382	273	206	333	175		259		
249	355	274	311	293	458	234	313	271		172		
265	327	277	218	268	173	247	312	232		212		
222	335	240	249	226	387	178	365	241		258		
288	268	315	238	411	369	177	216	157		174		
277	269	245	233	467	205	293	317	267		117		
239	251	310	392	170	180	153	294	272		206		
260	337	317	527	135	308	240	199	280		333		
279	266	237	303	211	277	237	185	172		314		
314	211	271	313	371	80	258	268	272		206		
241	249	215	292	223	290	237	283	256		129		
283	343	294	345	283	314	233	256	237		186		
213	261	257	386	342	262	239	247	223		251		
189	232	293	413	258	288	243	336	247		245		
276	246	248	348	251	272	259	272	313		250		
434	316	267	282	233	202	205	306	258		238		
284	268	310	366	418	235	300	276	163		202		
222	291	214	391	219	328	216	184	214		280		
277	234	340	297	284	374	260	200	205		190		
215	231	273	350	345	289	311	260	306		230		
266	324	273	265	219	352	169	348	255		290		
336	281	243	465	356	204	267	269	250		179		
250	332	274	293	232	230	257	325	271		295		
241	323	294	258	457	184	282	273	223		351		
283	269	286	441	414	236	179	310	175		205		
357	269	247	261	350	283	342	260	186		211		
281	334	278	151	320	262	345	282	192		158		
314	211	180	237	263	249	383	243	194		262		
359	256	337	125	279	269	371	214	210		168		
342	277	237	294	280	349	240	253	181		266		
331	314	258	459	228	287	286	235	274		221		
338	250	370	199	147	266	313	154	298		248		
259	307	259	301	319	281	269	265	190		227		
256	222	275	277	374	269	250	253	206		129		
300	264	305	299	228	333	232	387	294		190		
266	297	290	283	290	319	257	300	210		296		
292	316	242	315	262	415	164	239	263		275		
318	290	307	250	317	410	217	253	196		227		
279	262	256	251	248	305	203	328	316		266		
422	247	274	242	278	230	353	185	249		210		
318	324	303	373	280	238	221	282	175		350		
305	508	308	202	582	271	273	283	273		222		
297	300	290	543	280	262	239	249	136		276		

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101-25 (cont.)						101-90,95					
36802						10/3-10/17/00					
N	300		N	500							
Mean	240.85	Std. Div.	59.52	Mean	Std. Div.	162.46	53.08				
324	195	433	281	195	283	119	111	147	149	216	183
212	145	250	230	201	305	91	111	107	276	117	176
214	259	262	315	182	127	123	117	128	190	134	217
172	318	233	368	223	203	152	150	150	132	177	128
238	264	194	190	186	300	129	80	188	187	228	169
177	194	256	330	143	297	164	87	180	216	152	233
197	256	206	296	155	238	121	97	306	205	153	204
223	237	256	332	158	182	97	136	261	96	127	197
174	364	222	168	112	236	139	137	191	180	116	244
250	307	214	300	214	222	136	156	119	241	210	138
174	152	387	249	185	311	101	117	161	126	175	160
280	313	368	248	162	340	95	126	139	252	171	225
218	271	320	185	186	143	108	172	154	151	118	271
370	224	365	332	161	193	96	112	185	84	146	243
272	322	270	177	212	298	121	114	228	221	132	185
330	261	215	306	199	265	126	157	221	182	174	165
256	284	241	275	315	414	134	115	208	236	269	147
212	306	220	239	226	340	97	133	179	148	240	270
194	312	329	173	192		68	106	132	249	207	146
152	352	178	266	181		114	130	217	276	211	188
229	221	325	212	263		84	162	174	203	198	190
220	276	263	243	221		113	140	285	126	171	160
186	323	312	281	181		57	188	216	218	200	149
200	266	317	238	184		94	78	163	115	201	178
170	255	256	215	210		82	179	211	247	133	168
251	211	296	275	221		88	94	217	183	167	143
286	311	299	334	205		88	147	222	217	207	162
219	289	236	195	279		96	81	207	167	213	165
142	282	298	302	366		128	193	82	142	314	185
147	263	300	102	219		132	142	209	173	189	226
241	356	286	218	208		119	115	246	172	194	205
243	151	230	168	255		191	120	185	134	259	127
182	223	243	181	172		163	176	248	156	218	175
214	230	257	235	250		126	143	157	130	153	238
265	206	219	340	225		120	147	208	150	234	197
173	222	281	188	173		110	141	141	181	144	144
168	176	253	210	260		120	170	188	155	164	268
212	257	300	198	385		113	95	194	162	189	257
215	240	363	161	231		46	103	271	196	198	180
259	223	304	159	233		97	177	258	156	223	259
197	253	247	169	301		194	109	238	172	167	185
202	231	250	172	246		115	164	187	213	176	161
177	289	268	151	297		142	125	173	216	151	93
155	215	289	187	201		87	176	195	192	178	137
252	265	253	233	366		166	173	204	117	146	198
188	290	340	206	246		99	104	214	160	119	265
174	234	272	192	251		113	108	155	124	138	125

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101-90,95 (cont.) 10/3-10/17/00				102-20 10/3-10/31/00							
N	500	N	475								
Mean	162.46	Mean	192.69								
Std. Div.	53.08	Std. Div.	68.77								
145	92	138	96	213	177	184	147	208	197	166	366
113	110	89	222	363	223	303	174	177	353	158	40
365	127	144	186	321	299	253	251	199	378	120	87
181	104	146	99	341	111	200	341	175	191	197	152
283	94	156	165	333	192	137	166	202	351	263	100
207	176	131	134	138	229	302	84	147	374	196	249
270	126	80	231	129	174	314	166	173	164	173	75
179	114	127	164	253	223	160	262	222	254	143	200
237	118	135	216	196	122	231	119	202	125	173	66
297	157	220	176	297	218	222	198	219	286	148	143
331	143	127	209	209	165	187	155	208	258	169	178
149	111	144	101	175	217	292	162	191	246	155	154
189	160	157	113	303	240	211	139	242	282	151	126
113	168	181	125	134	171	188	148	249	181	181	74
202	117	113	37	124	134	238	166	356	170	180	106
66	92	101	184	221	198	375	101	331	192	159	131
200	125	162	122	301	218	159	168	323	155	163	87
136	159	105	217	257	122	271	192	361	166	168	128
216	231	263	167	210	175	178	181	176	164	178	107
166	80	130	157	147	133	145	196	376	123	144	96
204	182	116	85	334	271	239	69	418	179	115	164
97	149	189	154	307	202	188	189	314	253	168	137
104	130	75	143	167	202	198	159	227	174	185	264
162	234	143	164	230	198	218	181	274	129	251	93
108	136	118	197	191	281	147	144	205	163	198	193
73	149	147	214	237	228	197	142	148	194	190	170
154	140	148	114	335	202	260	170	160	173	251	115
102	115	139	182	246	172	313	128	151	218	122	167
159	177	120	282	338	191	148	164	115	169	210	109
128	160	118	174	357	118	125	158	148	163	190	206
99	174	113		242	60	175	140	420	195	289	134
189	110	149		244	89	113	199	366	104	254	132
115	128	191		214	138	232	171	223	143	235	117
134	94	113		372	123	264	128	194	164	119	96
87	124	136		135	216	139	181	196	196	203	74
114	114	128		141	180	151	206	142	234	235	112
134	92	90		275	213	223	156	141	214	171	124
144	246	94		290	155	197	198	154	169	84	177
126	147	148		226	186	235	187	371	108	144	195
228	103	191		136	177	170	131	207	184	170	163
124	96	147		248	155	161	174	326	213	202	167
177	172	143		244	113	347	233	146	197	109	126
175	153	106		396	257	168	165	335	183	247	126
122	102	201		214	84	139	164	226	197	147	182
163	165	117		100	244	204	266	176	161	233	224
131	95	248		245	163	189	178	297	289	153	167
184	112	151		301	180	167	183	269	124	111	249

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102-20 (cont.)			102-80						
10/3-10/31/00			10/24-10/31/00						
N	475		N	300					
Mean	192.69		Mean	165.54					
Std. Div.	68.77		Std. Div.	68.94					
186	162	204	118	94	139	114	218	306	281
180	156	135	149	247	85	181	344	150	208
358	157	108	216	199	181	145	195	329	102
215	178	118	173	147	140	140	224	191	95
114	254	155	110	186	70	137	228	194	110
147	296		104	82	78	172	219	123	89
115	275		177	134	172	132	234	229	227
158	253		135	119	96	157	166	150	94
323	182		107	109	92	126	289	105	351
181	121		133	110	111	242	178	127	383
276	174		179	124	165	180	194	69	140
211	208		111	133	149	205	202	189	275
202	161		140	105	157	185	113	249	157
188	273		147	106	99	216	208	146	97
141	233		138	113	117	263	114	184	102
296	185		132	175	115	225	89	150	272
167	166		182	156	112	252	72	134	161
204	210		138	99	123	231	146	312	89
231	181		111	181	153	335	115	101	
215	176		230	110	121	255	124	180	
116	152		123	88	62	262	105	355	
239	129		113	163	108	279	122	167	
318	273		213	72	166	294	141	220	
157	142		139	125	158	280	123	228	
97	210		150	86	104	183	129	90	
222	228		114	142	107	179	89	156	
184	419		107	184	152	312	332	126	
193	109		211	159	94	245	259	120	
92	136		112	179	113	212	112	377	
164	211		203	151	105	220	197	122	
284	181		171	104	197	179	78	110	
174	144		124	127	186	199	252	126	
145	115		98	130	100	116	109	137	
112	109		126	233	99	254	222	125	
126	148		105	133	102	277	333	111	
266	125		117	125	176	235	339	151	
116	133		108	125	145	246	267	168	
130	157		167	142	166	297	144	189	
144	97		132	94	121	172	116	60	
212	98		125	114	84	238	366	112	
150	124		204	113	149	313	303	319	
96	123		185	175	102	190	156	358	
325	123		144	153	123	255	99	210	
262	108		130	72	128	334	96	192	
160	107		82	87	172	234	93	168	
115	152		168	150	73	200	227	326	
181	155		115	104	155	190	136	187	

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103-21,30												
10/24-10/25/00												
N	805											
Mean	230.24											
Std. Div.	58.04											
235	218	189	244	163	214	279	270	287	375	212	261	144
198	239	265	208	195	310	292	188	212	160	314	233	245
172	121	156	106	222	250	264	317	255	255	310	252	193
264	231	245	204	157	136	355	320	230	223	396	356	269
234	205	310	296	100	303	288	298	203	226	239	346	136
273	207	227	125	134	280	250	331	278	379	361	241	245
225	217	271	240	155	294	296	185	230	255	335	240	165
200	212	178	311	136	211	348	238	256	219	256	244	182
250	248	228	214	128	248	230	322	184	351	215	232	191
133	311	210	173	225	286	289	158	236	285	314	207	159
223	258	269	128	169	76	297	257	306	340	216	293	175
225	318	266	213	187	213	278	330	281	191	255	169	279
255	245	177	198	238	236	260	285	225	217	199	316	165
225	188	288	137	172	174	238	316	226	157	240	202	210
212	229	247	124	203	213	307	307	140	340	230	125	154
206	305	258	202	216	172	257	262	169	325	288	222	230
202	222	241	202	216	216	163	158	259	294	244	217	229
145	166	232	185	235	359	352	131	239	233	202	192	252
250	214	222	126	214	247	179	339	218	225	235	220	206
328	199	238	165	166	302	175	230	195	410	305	376	276
242	312	230	171	280	282	219	284	246	206	253	142	240
240	260	227	178	258	432	194	272	220	238	250	262	270
171	238	235	169	242	236	319	253	266	184	345	232	204
284	175	166	172	252	277	231	175	213	297	250	203	190
272	308	212	137	144	421	153	295	222	316	239	185	196
190	214	170	222	287	257	292	360	199	340	256	213	206
239	208	243	141	261	336	175	151	291	210	303	180	249
164	243	212	202	264	303	162	308	292	310	254	332	242
207	225	293	204	178	342	120	284	255	206	272	208	183
281	240	216	248	244	324	293	236	205	301	207	180	174
153	158	223	142	231	255	199	310	267	219	212	216	221
215	194	237	145	348	224	203	313	273	235	317	218	316
212	242	208	163	232	273	208	280	272	296	262	198	152
209	160	219	146	236	341	139	183	288	160	251	207	176
161	204	203	173	238	419	169	195	320	221	278	253	278
227	288	303	154	189	265	231	196	303	271	215	171	197
226	181	209	159	282	318	189	295	247	426	163	229	174
205	159	213	278	299	213	204	267	258	284	358	177	179
157	188	136	156	239	235	173	221	217	250	284	202	234
325	201	198	133	190	250	256	172	222	281	430	184	203
173	173	238	204	255	299	204	225	216	281	203	232	237
238	156	247	170	263	367	213	212	204	366	138	203	202
178	196	236	199	230	296	200	116	226	429	310	182	181
165	140	275	150	230	193	334	263	246	281	196	217	122
219	139	242	223	264	336	272	146	197	245	330	205	211
187	291	320	191	208	316	100	234	261	368	353	185	185
248	163	198	173	264	269	310	256	267	279	319	181	165

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103-21,30 (cont.)					103-80				
10/24-10/25/00					10/3-10/11/00				
N	805				N	350			
Mean	230.24				Mean	240.18			
Std. Div.	58.04				Std. Div.	74.06			
205	211	272	324	259	120	259	165	257	259
146	171	200	254	210	269	210	160	165	309
176	241	232	283	199	338	377	310	218	350
278	177	166	218	172	291	276	292	241	172
253	160	222	274	338	246	306	293	168	268
179	283	272	261	216	246	313	267	218	482
176	222	139	300		144	251	203	140	322
146	198	165	360		163	204	145	94	243
258	240	226	253		209	304	258	227	177
238	156	240	258		242	404	177	262	198
112	269	183	235		291	241	190	226	268
243	222	185	258		151	262	163	221	227
259	231	247	240		229	339	347	198	167
264	212	177	187		310	230	193	204	327
222	206	245	208		186	405	153	223	252
193	152	181	290		220	193	184	280	338
258	213	302	249		73	305	158	264	268
191	118	198	243		273	242	148	232	292
240	253	150	206		188	312	134	204	272
279	156	251	206		498	279	145	178	325
271	294	143	262		263	191	183	267	186
248	185	179	267		291	283	115	253	141
236	213	200	238		147	303	137	210	214
280	269	219	278		307	299	257	300	370
206	278	231	158		233	167	157	202	183
263	210	152	232		144	202	213	220	225
261	305	180	166		237	300	144	139	135
208	254	264	197		97	249	180	146	169
207	199	270	238		224	181	172	204	154
149	253	160	267		226	297	209	278	199
189	195	137	222		182	198	148	235	221
246	258	165	140		134	169	178	201	323
160	240	134	145		315	207	169	202	142
197	342	205	234		249	311	164	212	326
254	243	109	254		193	297	217	213	195
162	252	163	244		183	266	207	436	135
151	221	248	264		248	176	169	309	122
219	230	259	139		227	213	160	318	248
115	343	174	170		217	288	187	262	269
209	266	170	229		307	189	165	405	181
220	230	174	205		301	264	124	226	237
262	195	93	185		180	248	265	377	178
143	290	241	194		250	249	157	312	303
81	248	192	151		336	229	190	246	183
238	227	241	299		274	264	282	221	337
180	273	146	267		195	193	122	455	156
222	259	158	211		198	262	138	225	274
									151
									205

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103-80 (cont.)			106-30							
10/3-10/11/00			10/3-10/24/00							
N	350	N	400							
Mean	240.18	Mean	225.92							
Std. Div.	74.06	Std. Div.	73.18							
323	371	186	366	181	266	233	112	80	165	163
257	250	335	393	264	225	202	165	225	223	184
160	345	253	212	296	143	200	216	269	273	257
242	286	316	204	154	205	164	138	272	188	167
236	235	314	158	337	116	142	150	183	215	173
120	342	202	318	207	314	240	184	95	352	135
288	292	281	247	187	86	163	220	303	215	168
144	196	271	179	147	307	183	246	215	169	174
328	428	304	299	105	186	305	162	213	240	176
175	250	329	138	211	154	165	78	182	164	192
120	255	279	275	140	181	240	321	315	164	147
223	192	186	99	325	255	209	152	254	257	161
182	410	490	261	139	193	248	142	284	319	76
270	274	203	262	193	252	293	165	202	216	240
192	424	314	116	312	246	314	168	193	226	133
217	350	375	352	192	218	197	244	260	211	168
243	322	169	97	330	220	283	208	193	251	140
212	243	162	184	158	248	257	281	262	205	130
293	243	192	326	310	240	251	200	278	352	158
335	344	243	108	477	234	327	185	421	278	150
350	246	346	167	244	231	268	277	233	136	136
308		256	244	164	214	304	286	246	117	148
250		407	213	333	221	228	353	322	189	175
285		219	213	132	211	198	236	318	200	200
206		308	237	378	205	240	254	326	128	
303		219	230	324	249	282	234	259	162	
327		171	134	281	155	279	242	245	222	
355		242	319	211	224	256	230	369	179	
282		229	287	120	261	302	176	239	102	
317		157	487	146	216	231	282	310	143	
356		162	363	291	190	334	240	284	130	
255		190	156	167	246	327	185	143	228	
222		242	146	254	330	124	235	325	154	
175		246	183	171	229	342	346	328	173	
261		318	197	327	148	296	263	314	142	
544		201	208	227	154	205	219	300	152	
446		201	306	277	182	333	258	259	174	
315		294	426	179	189	234	168	317	193	
337		239	241	86	218	161	227	249	190	
303		254	229	114	317	235	262	340	196	
222		155	392	197	237	139	170	286	158	
393		239	196	163	197	123	177	241	176	
321		240	270	296	221	94	281	259	124	
172		158	214	334	227	97	221	318	154	
336		409	202	401	179	170	240	203	231	
281		232	107	218	268	179	186	167	153	
266		392	141	119	217	189	124	200	159	

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112-11,21 10/4-10/24/00						112-41,42 10/4-10/19/00					
N	250			N	200						
Mean	219.04	Std. Div.	60.54	Mean	158.44	Std. Div.	43.90				
201	277	179	188	185	299	123	170	199	119	134	
223	266	220	139	252	380	186	178	189	110	210	
172	296	194	194	232	199	162	279	223	137	204	
176	243	280	235	265	205	149	136	160	144	167	
270	307	302	189	198	186	122	154	181	112	89	
147	310	215	112	136	143	152	124	264	158	146	
204	216	270	224	173	236	166	195	149	177	157	
153	196	191	204	294	192	76	150	159	160	128	
201	253	213	84	192	172	174	127	135	126	168	
201	234	184	200	217	156	226	145	142	127	122	
195	180	117	168	196	138	152	176	160	56	156	
202	241	235	338	346	324	272	197	238	132	170	
253	208	329	251	284	180	166	210	146	120		
239	258	280	173	235	305	187	141	107	86		
255	298	317	191	283	188	211	141	141	133		
212	119	173	182	253		155	103	107	156		
178	199	225	220	196		200	93	185	111		
244	144	218	208	194		222	163	93	106		
273	214	172	272	201		188	200	152	130		
221	234	317	189	138		197	189	170	108		
216	181	191	200	209		142	143	139	116		
262	271	148	219	236		125	174	137	232		
228	299	156	134	273		195	162	145	159		
239	187	155	156	169		147	113	219	125		
126	163	188	196	331		135	148	120	258		
180	222	265	296	270		129	156	135	97		
164	210	215	190	226		136	125	231	91		
111	226	198	244	156		122	117	128	104		
133	160	368	292	319		193	156	196	191		
201	160	194	102	212		164	208	163	178		
172	288	193	136	176		232	183	108	116		
112	190	249	167	224		75	222	98	105		
201	179	178	204	335		85	175	179	116		
307	304	237	187	275		130	187	137	133		
241	149	270	147	183		207	165	120	120		
253	229	301	271	71		140	135	149	114		
280	147	262	271	128		87	225	162	191		
286	216	184	264	163		233	145	269	178		
201	140	188	213	301		144	252	124	127		
319	296	217	231	237		180	184	172	213		
234	298	177	300	111		163	179	144	181		
300	155	146	348	80		139	275	114	187		
208	160	319	198	269		268	238	119	193		
209	181	290	441	274		147	315	123	188		
172	181	239	177	295		149	198	149	142		
359	218	197	332	234		154	133	139	139		
232	172	170	274	111		114	164	159	187		

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112-43,44,45,46,47,48 10/4-10/19/00					113-62,63,64,65,66 10/3-10/11/00				
N	225				N	235			
Mean	188.50		Mean	229.43			Std. Div.	84.06	
Std. Div.	60.37								
186	185	351	214	199	298	192	191	261	275
206	77	203	243	241	288	346	183	347	210
198	101	231	189	176	245	301	190	184	326
219	226	266	196	170	376	160	217	248	179
272	210	186	247	135	250	177	154	229	252
162	169	158	159	85	265	186	197	310	92
80	174	117	307	137	184	201	266	303	158
276	175	177	314	143	260	160	366	218	231
105	159	288	184	195	211	164	184	267	140
144	159	168	170	202	214	109	226	191	190
123	123	182	155	138	175	135	182	113	211
203	109	241	183	222	143	157	191	189	157
230	197	188	271	139	214	158	210	141	421
312	151	262	262	133	348	125	210	161	428
350	168	152	163	212	77	200	299	177	316
115	139	331	319	116	129	188	242	195	457
214	278	252	291	244	215	120	321	117	391
213	284	128	183	144	193	157	299	218	330
156	143	177	231	106	334	193	280	111	359
94	208	199	159	118	194	218	236	185	242
154	180	140	191	205	95	141	146	140	345
181	124	191	268	153	94	183	188	268	499
141	140	119	140	217	273	142	246	112	370
97	152	258	260	165	183	183	123	201	264
191	139	199	70	148	290	153	150	161	296
180	101	311	209	157	257	152	260	154	281
205	167	206	163	121	225	175	274	102	286
158	79	198	136	126	253	177	187	148	423
181	254	244	169	150	179	175	135	111	329
75	182	399	203	107	76	172	183	257	340
227	255	206	178	130	65	163	147	151	271
240	201	196	190	171	253	179	288	188	455
201	387	138	85	169	402	216	443	216	434
205	203	168	236	178	324	281	210	197	298
127	251	244	219	122	214	128	346	181	389
212	209	240	167	146	369	207	351	358	339
120	234	201	164	173	244	155	307	239	305
156	229	135	262		283	168	384	263	315
129	180	143	168		219	254	347	134	324
151	165	171	233		210	167	276	231	306
244	217	230	142		150	184	128	196	365
137	246	233	112		164	201	387	260	190
198	158	203	137		225	168	267	213	250
152	292	272	133		246	147	269	87	230
173	158	301	165		273	108	202	169	348
175	403	189	266		191	182	367	234	309
159	151	175	128		163	151	266	197	244

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